

NNT : 2016SACLE058

THESE DE DOCTORAT
DE
L'UNIVERSITE PARIS-SACLAY
PREPAREE A
L'UNIVERSITE D'EVRY-VAL-D'ESSONE

ÉCOLE DOCTORALE N°578
Sciences de l'homme et de la société (SHS)
Spécialité de doctorat : Sciences de gestion

Par

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A knowledge-based development model for primate cities of the developing world (Appendices)

Thèse présentée et soutenue à Evry, le 21 novembre 2016 :

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Mots-clés: développement fondé sur la connaissance, sociétés de la connaissance, villes-capitales, pays en développement, modèle de maturité

1.1 INTRODUCTION ET CONTEXTE

1.1.1 Le Défi de l'Urbanisation

Au regard de la taille de leur population, les villes impactent de façon disproportionnelle – positive et négative – le bien-être des nations par le biais d'une série de mesures sociales, culturelles et environnementales (McKinsey Global Institute, 2011 ; Moore et al., 2003 ; OCDE, 2013 ; UN-HABITAT, 2012). De par leur concentration de richesses, d'habitants et leur éventail de ressources matérielles et immatérielles, lorsque des problèmes surviennent au sein des villes- troubles sociaux, catastrophes naturelles ou anthropiques – ces derniers peuvent présenter des répercussions significatives. En outre, dans le cadre de l'économie mondialisée contemporaine, les chaînes d'approvisionnement transfèrent volontiers ces effets néfastes à travers le monde en suivant souvent des mécanismes complexes.

Les effets cités précédemment sont amplifiés dans les villes-capitales. Le terme de « ville-capitale », introduit par Mark Jefferson (1939), décrit une ville dont la population est bien plus importante qu'au sein de n'importe quelle autre ville appartenant à une nation déterminée, et qui joue un rôle central en ce qui concerne la politique nationale, économique et l'influence socio-culturelle (Argenbright, 2013). Le pourcentage de la population mondiale vivant dans les centres urbains devrait passer de 50% en 2013 à 70% dans les trente prochaines années (UN-HABITAT, 2014 ; UNDESA, 2013). Cette tendance à l'urbanisation devrait renforcer le rôle des villes dans l'accomplissement des objectifs internationaux de développement aux niveaux national et mondial.

Autrefois les zones urbaines les plus importantes se situaient dans des régions développées, mais elles sont aujourd'hui concentrées dans les pays en développement. D'après UN-HABITAT, environ 90% de l'urbanisation se déroule dans les pays en développement¹, surtout en Asie et en Afrique, où chaque jour les zones urbaines accueillent environ 200 000 habitants supplémentaires (UN-HABITAT, 2013).

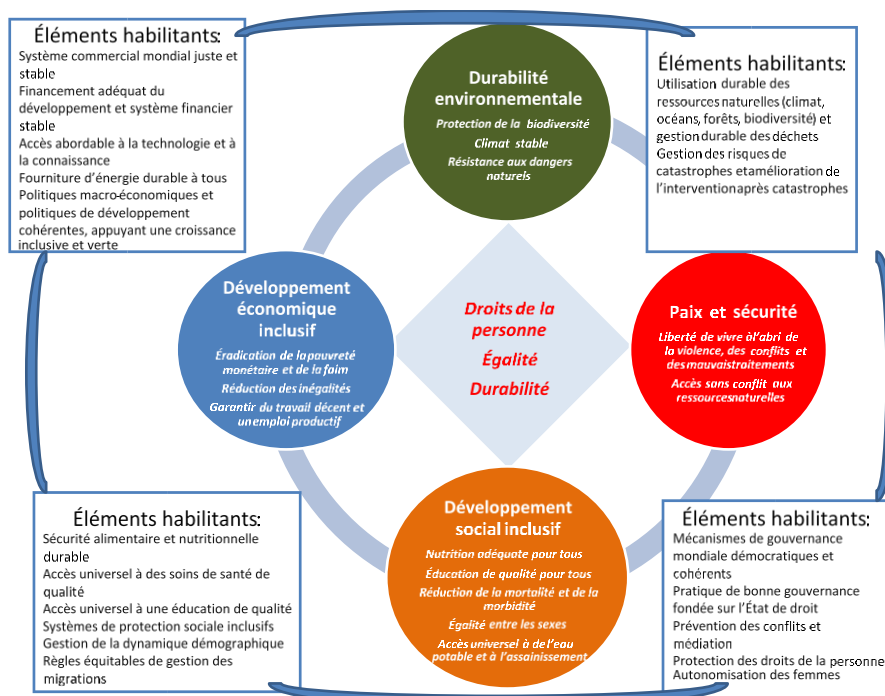
Les villes, aussi bien dans les pays développés que dans ceux en voie de développement, se doivent de saisir les opportunités et de relever les défis qui impactent leur viabilité à long

¹ La Banque Mondiale classe les pays en fonction de leur Revenu National Brut (RNB) par habitant. Pour l'année 2012, ces groupes sont les suivants : faibles revenus, 1 035\$ ou moins ; tranche inférieure des revenus intermédiaires, 1 036\$ - 4 085\$; tranche supérieure des revenus intermédiaires, 4 086\$ - 12 615\$; revenus élevés, 12 616\$ ou plus. Les pays à faibles revenus et les pays à revenus intermédiaires sont communément désignés en tant que pays en développement. Les pays à revenus élevés sont souvent désignés en tant que pays de l'OCDE.

terme. Cependant, les villes dont les taux d'urbanisation font part d'un rythme plus accéléré sont aussi celles qui sont le moins préparées- à miser sur les avantages de l'urbanisation, ou à entreprendre des actions en mesure de contrer ses effets négatifs. Dans ce contexte riche en opportunités et en défis il est indispensable de s'interroger sur ce qui peut être fait pour aider les villes à urbanisation rapide en Afrique et en Asie à gérer ces problématiques de façon efficace.

1.1.2 Objectifs internationaux de développement

Quels sont les défis en matière de développement auxquels les pays et les villes doivent faire face en s'appuyant sur une accentuation des connaissances ? L'Exposition 1 présente quelques-uns des principaux enjeux mondiaux identifiés par le Système des Nations Unies (UN, 2012) dans l'optique de la construction d'un Agenda de Développement Post-2015. Le rapport identifie quatre domaines stratégiques centraux : le développement social inclusif, le développement durable, le développement économique inclusif, et la paix et la sécurité. Ces objectifs viennent compléter le travail du précédent Programme des Objectifs du Millénaire pour le Développement (OMD) adopté en 2000 (UN, 2000). Ces quatre domaines reflètent la prise de conscience croissante de l'insuffisance d'objectifs économiques isolés.



Exposition 1 : Les quatre domaines principaux pour les interventions liées au développement adoptés par l'Agenda Post-2015 des Nations Unies (UN, 2012)

1.1.3 La connaissance comme ressource et moteur de transformation sociale

De plus en plus, le "travail cérébral" immatériel, l'information et les processus de médiation en lien avec le développement des connaissances plutôt que la production matérielle, les

marchandises ou les activités à forte intensité de main-d'œuvre sont à l'origine des principales sources de croissance et de valeur ajoutée socio-économique (Chen & Dahlman, 2005 ; OCDE, 1996). L'omniprésence et les impacts de ces interactions ont suscité des débats visant à déterminer si ces nouvelles formes d'activités, de processus et d'organisation constituent un nouveau paradigme social (Webster, 2002; Castell, 2010). Ceci a conduit les chercheurs à émettre l'hypothèse que l'humanité évolue désormais dans un monde post-industriel où la création, la préservation, la dissémination et l'application de l'information et des connaissances sont les facteurs les plus déterminants au regard de l'avantage concurrentiel et du développement humain (Castell, 2010 ; Drucker, 2008). Ces changements sont perçus en tant qu'opportunités pour la résolution des problèmes sociétaux actuels, mais aussi comme une source de nouveaux risques et défis (Boutang, 2011 ; David & Foray, 2006 ; Castell, 2010 ; Foray, 2006 ; Goede, 2011 ; Mansell, 2010 ; Mercer, 2005 ; Pinter, 2008 ; UNESCO, 2005). L'approche basée sur les ressources de l'entreprise ou RBV, pour *Resource-Based View* (Barney, 1991 ; Conner, 1991) est un cadre théorique central de la littérature relative à la gestion stratégique qui envisage l'avantage concurrentiel d'une entreprise en tant que résultat d'un ensemble de ressources hétérogènes, précieuses, rares, difficilement imitables et substituables. Les connaissances, les ressources fondées sur les connaissances et les compétences telles que l'innovation et la capacité d'absorption sont conçues comme relevant d'une catégorie spéciale de ressources puisqu'elles combinent la dépendance au contexte du développement de la connaissance et sa complexité sociale (Bennet & Bennet, 2007). Ces caractéristiques font en sorte que les connaissances soient difficiles à imiter et soient en mesure de constituer un avantage concurrentiel durable et de survie. Ces réflexions ont débouché sur une approche de l'entreprise fondée sur la connaissance et ont fourni une importante base théorique aux efforts déployés dans le domaine de la gestion des connaissances ainsi qu'aux systèmes de soutien associés (Alavi & Leidner 2001).

La prise en considération de la connaissance en tant que source d'avantage concurrentiel valorisé a eu pour effet d'augmenter l'intérêt des firmes à mieux comprendre la façon dont cette ressource stratégique peut être utilisée efficacement afin d'atteindre des objectifs stratégiques (Dalkir, 2011). A mesure que cette vision des choses évolue, l'intérêt augmente aussi pour le domaine relativement récent de la gestion des connaissances qui s'intéresse à l'application des connaissances pertinentes pour le soutien à la réussite organisationnelle (Dalkir, 2011). La gestion des connaissances est soutenue et enrichie par des modèles et approches émanant de différentes perspectives disciplinaires. Ces influences transdisciplinaires incluent, entre autres, l'anthropologie, la sociologie, la science des organisations, les sciences de l'information et la bibliothéconomie ainsi que les sciences cognitives (Dalkir, 2011). Elles offrent un mélange riche, éclectique d'ontologies et d'épistémologies qui transcendent et questionnent les cloisonnements relatifs aux structures,

aux méthodologies et aux traditions des disciplines universitaires.

1.1.4 A la croisée des villes, du développement et de la connaissance

La connaissance est de plus en plus perçue en tant que facteur crucial par les acteurs internationaux, tels que les Nations Unies, pour répondre aux enjeux stratégiques relatifs au développement humain dans toute une série de secteurs (Ergazakis & Metaxiotis, 2011 ; Ritter, 2006 ; Banque Mondiale, 1998 ; UNESCO, 2005). Cet intérêt a conduit à l'émergence d'un développement fondé sur la connaissance dont les bases théoriques couvrent les domaines de l'économie et de la gestion des connaissances (Carrillo, 2004). La prise en considération des villes comme lieux délimitant des zones primordiales pour relever les défis liés au développement humain et la reconnaissance de leur rôle clé en tant que moteurs macro-économiques a suscité l'intérêt pour le développement fondé sur la connaissance dans l'environnement urbain (Borja & Castells, 1997 ; Bounfour & Edvinsson 2005 ; Carrillo, 2004 ; Ergazakis & Metaxiotis, 2011 ; Florida, 2004 ; Sharma et al., 2008, 2009 ; Yigitcanlar & Velibeyoglu, 2008). Ceci a donné lieu à un domaine de spécialisation connu sous le nom de développement urbain fondé sur la connaissance ou villes de la connaissance, une combinaison entre le développement fondé sur la connaissance et les études urbaines qui cherchent à apporter des réponses stratégiques aux enjeux complexes, multidisciplinaires auxquels les villes font face (Carrillo, 2004 ; Yigitcanlar & Velibeyoglu, 2008 ; Ergazakis & Metaxiotis, 2011).

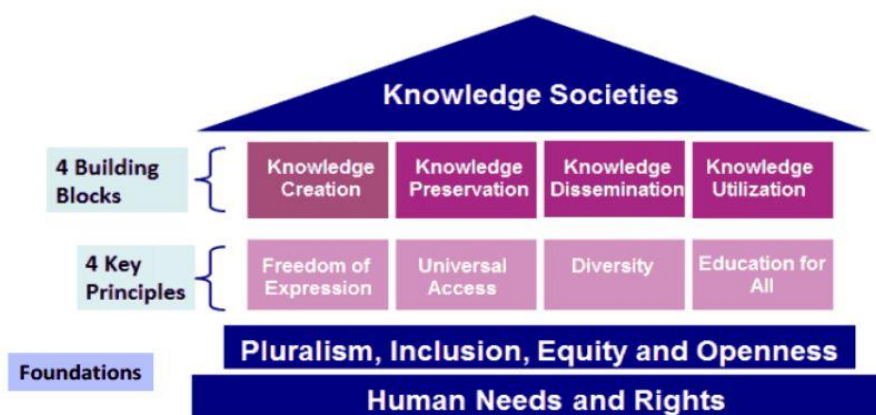
Les approches du développement fondé sur la connaissance mettent l'accent sur une approche plus holistique, qui s'intéresse aux aspects économiques, aux facteurs environnementaux tels que le développement durable mais aussi à des dimensions sociales telles que la tolérance et la cohésion sociale (Borja & Castells, 1997 ; Ergazakis & Metaxiotis, 2011 ; Yigitcanlar & Velibeyoglu, 2008). Ainsi, le développement fondé sur la connaissance est en adéquation avec les objectifs fixés par les Nations Unies.

Ce domaine de recherche se trouve encore dans une phase pré-paradigmatique avec des méthodologies, des cadres et des approches qui continuent d'évoluer (Ritter, 2006 ; Ergazakis & Metaxiotis, 2011). Bien que les villes des pays en développement représentent les espaces au potentiel le plus important – positif et négatif – en ce qui concerne le développement humain des prochaines années du XXI^{ème} siècle, la majeure partie de la recherche académique sur ce sujet semble s'intéresser au contexte des pays développés (Atiqul Haq, 2012 ; Jenkins, 2013 ; Roy, 2005). Cette situation soulève des questions éthiques sur l'intention, le but, la responsabilité et les actions des chercheurs. L'appréhension des conditions qui débouchent sur des résultats satisfaisants en matière de développement est encore limitée, tout comme les méthodes et approches reconnues pour instaurer un développement urbain fondé sur la connaissance. Les efforts entrepris pour reproduire des expériences urbaines fructueuses ont

souvent échoué de par leur focalisation sur des mesures limitées – souvent économiques – et des aspects de la réussite (Bresnahan & Gambardell, 2004 ; Yigitcanlar et al., 2012 ; Yigitcanlar & Lönnqvist, 2013). Par ailleurs, un nombre considérable de théories et modèles proviennent de cadres de référence donnant la priorité aux valeurs économiques et ne mettent pas suffisamment l'accent sur les droits humains et la diversité.

1.1.5 Le Cadre Conceptuel des Sociétés de la Connaissance de l'UNESCO

L'UNESCO plaide pour les « sociétés de la connaissance », fondées sur les principes des droits de l'homme. Les sociétés de la connaissance aspirent à octroyer à chaque citoyen la possibilité de concrétiser son plein potentiel, elles contribuent à la résolution de problématiques sociétales et instaurent la paix par le biais d'une utilisation équitable de la connaissance (UNESCO, 2005 ; UNESCO/ITU, 2014). Ces idées sont analogues à celles du développement fondé sur la connaissance. L'UNESCO a proposé un cadre conceptuel pour atteindre ces objectifs (Voir Exposition 2). Le modèle de l'UNESCO a été approuvée par ses Etats Membres et soutenu par des chercheurs comme Daniel Bell, Manuel Castells, Dominique Foray, Bruno Latour, Robin Mansell, Saskia Sassen, Nico Stehr et Alain Tourraine, qui ont contribué au Rapport Mondial sur les Sociétés de la Connaissance (UNESCO, 2005).



Exposition 2 : Cadre Conceptuel des Sociétés de la Connaissance de l'UNESCO (Souter, 2010 ; UNESCO, 2005)

Le Cadre Conceptuel des Sociétés de la Connaissance de l'UNESCO fournit une base théorique s'appuyant sur les droits de l'homme afin de contribuer à un développement fondé sur la connaissance. Les tableaux 1 et 2 définissent les concepts de ce cadre. Le Rapport Mondial de l'UNESCO en 2005 (2005, p194) fait spécifiquement part de la nécessité du développement d'outils, d'indicateurs, de modèles ainsi que d'autres moyens pour assister les pays, plus particulièrement ceux en développement, dans la mesure des progrès des sociétés de la connaissance. Bien que le cadre de l'UNESCO ait été promu et accueilli par ses 195 Etats Membres, aucune expérimentation empirique ou développement ultérieur du cadre n'a été entrepris.

Exposition 3 : « Principes clés » des notions relatives au Cadre Conceptuel des Sociétés de la Connaissance de l'UNESCO

Concept	Définition	Références dans la Littérature
Liberté d'Expression	Le droit de chaque individu à la liberté d'opinion sans qu'il puisse y avoir d'ingérence et le droit de rechercher, de recevoir et de communiquer des informations et des idées sans considérations de frontières et par quelque moyen d'expression que ce soit.	Peters, 2010 ; United Nations 1948 ; UNESCO, 2005, 2010
Accès Universel	Un accès équitable et abordable de tous les citoyens à une infrastructure de l'information (notamment à Internet) et aux informations et connaissances essentielles au développement humain collectif et individuel.	UNESCO 2003
Diversité Culturelle	La culture prend des formes diverses à travers le temps et l'espace. Cette diversité s'incarne dans l'originalité et la pluralité des identités qui caractérisent les groupes et les sociétés composant l'humanité. Source d'échanges, d'innovation et de créativité, la diversité culturelle est, pour le genre humain, aussi nécessaire que l'est la biodiversité dans l'ordre du vivant. Elle constitue le patrimoine commun de l'humanité et elle doit être reconnue et affirmée au bénéfice des générations présentes et des générations futures.	UNESCO 2001, 2005
Education pour Tous	Fournir à tous les enfants et adultes une éducation de base de qualité afin de construire les fondements et les compétences nécessaires à un accompagnement efficace des changements sociaux et d'équiper les citoyens des compétences essentielles pour apprendre à apprendre et participer pleinement à la vie de leurs sociétés.	United Nations 1948 ; UNESCO 1990

Exposition 4 : Les notions fondamentales du Cadre Conceptuel des Sociétés de la Connaissance de l'UNESCO

Nom du Concept	Définition	Références dans la Littérature
Les Besoins & Droits Fondamentaux	Ils font référence à l'ensemble des besoins de base essentiels à la survie et à la garantie de la dignité humaine reconnus par le droit international humanitaire.	De Beco, 2008; OHCHR, 2012; UN, 1948; UN, 2012
Pluralisme	Un engagement fort vis-à-vis de la diversité et exprimé par des processus comme la recherche active et la construction d'une compréhension qui dépasse les divergences, en incluant aussi bien la critique d'un autre point de vue qu'une autocritique active et une réflexion sur les points de vue propres à autrui.	Eck, 2006 ; Global Centre for Pluralism, 2012; UNESCO, 2000
Inclusion	La capacité d'un individu à exercer et revendiquer pleinement les droits sociaux, culturels, politiques et d'autres droits qui lui sont accordés en vertu de lois internationales et nationales.	De Beco, 2008 ; OHCHR, 2012 ; UNESCO, 2005
Equité	La conviction que les besoins essentiels des individus devraient être assouvis de façon consistante et adéquate, que les fardeaux et les avantages ne devraient pas être répartis de façon trop inégale parmi les communautés, et que cette politique devrait être appliquée avec impartialité, équité et justice afin d'atteindre ces objectifs.	Beder, 2000 ; Clark, 2012 ; Dulal et al., 2009 ; Falk et al., 1993, UNESCO, 2005

Nom du Concept	Définition	Références dans la Littérature
Ouverture	Un concept hybride qui englobe trois aspects distincts: la transparence et la participation à des décisions qui influencent le bien-être personnel ; la curiosité et la volonté de s'aventurer au-delà de son cadre de référence ; et l'utilisation de normes ouvertes, la collaboration et le partage des ressources de la connaissance.	Downes, 2007; Educational Technology & Media Massive Open Online Course 2013; Commission Européenne, 2001 ; Gisselquist, 2012 ; Judge et al., 2013 ; Matthews et al., 2004; McCrae et al. 1992; UNESCO, 2005

1.1.6 Objectifs et Questions de Recherche

Cette étude qui emploie des méthodes mixtes a pour objet de a) développer un Modèle de Développement fondé sur la Connaissance et un Modèle de Maturité, basé sur le Cadre Conceptuel des Sociétés de la Connaissance de l'UNESCO ; b) valider le modèle de développement fondé sur la connaissance par le biais des panels de Delphi ; c) tester les modèles de maturité sur le terrain dans certaines villes-capitales de pays en développement situées en Afrique et en Asie et d) évaluer la pertinence de ces modèles pour les décideurs politiques de ces pays. Cette étude vise à suivre les recommandations du Rapport Mondial de l'UNESCO (UNESCO, 2005) et répond à l'enjeu urbain auquel sont confrontées les villes de pays en développement en Asie et en Afrique. De plus, elle cherche à apporter des contributions théoriques en développant des méthodes, des modèles et des critères dans le domaine du développement fondé sur la connaissance basés sur les principes des droits de l'homme. La présente recherche tente de répondre aux questions suivantes :

QR1 : Comment le concept de Sociétés de la Connaissance de l'UNESCO peut-il être mis en œuvre pour répondre aux enjeux stratégiques (objectifs de développement post-2015 des Nations Unies) auxquels doivent faire face les villes des pays en développement ?

QR2 : Quels éclairages sont apportés par les Modèles relatifs au Développement fondé sur la Connaissance?

QR3 : Quel est le degré de pertinence des Modèles relatifs au Développement fondé sur la Connaissance dans le contexte au sein duquel les décideurs politiques et les experts des villes sélectionnées opèrent et dans quelle mesure peuvent-ils être utiles à l'élaboration et au développement de plans d'action ?

1.1.7 Motivations Personnelles

Le Chercheur est responsable de la gestion du Programme intergouvernemental de l'UNESCO

Information Pour Tous (PIPT) qui aide les gouvernements dans l'élaboration de politiques et dans le renforcement des capacités et des projets visant la création des conditions propices aux sociétés de la connaissance. Au cours de mes 15 années passées à l'UNESCO, j'ai pu contribuer à la conception et à la mise en œuvre de processus de développement nationaux et internationaux et j'ai vécu et travaillé majoritairement en Afrique et en Asie-Pacifique. Ces expériences, ainsi qu'une volonté de construire un futur meilleur pour mes enfants, renforcent mon intérêt.

1.1.8 Pertinence de la recherche

Cette recherche contribue à faire avancer et à mettre en œuvre le Cadre Conceptuel des Sociétés de la Connaissance de l'UNESCO et à la mission de l'Organisation qui est celle de développer des outils stratégiques et des ressources pour les pays en développement. Cette recherche constitue une première étude empirique ainsi qu'un développement du Cadre de l'UNESCO et apporte des informations sur sa pertinence pour les décideurs politiques des villes des pays en développement. Cette étude présente en outre des modèles validés, des critères / indicateurs et des méthodes de conception et outils qui contribuent à la recherche dans ce domaine pré-paradigmatique.

Cette recherche contribue aussi à la théorie et à la pratique relative au domaine du développement fondé sur la connaissance dans le cadre d'un problème particulier – celui des villes à croissance rapide des pays en développement – problème qui ne semble pas totalement compris (Carrillo, 2005 ; UN-HABITAT, 2014 ; UNDESA, 2012). L'étude fait progresser l'appréhension de la mise en œuvre efficace de la connaissance au niveau sociétal afin de répondre aux enjeux stratégiques de développement et aux questions qui s'avèrent essentielles pour les responsables de la gestion urbaine.

1.2 REVUE DE LA LITTERATURE

Cette revue de la littérature explore : le concept de société post-industrielle et le rôle d'accompagnement de la connaissance et des actifs immatériels en tant que ressources stratégiques pour le développement ; le rôle de l'UNESCO en tant qu'acteur international dans le domaine du développement fondé sur la connaissance ; les villes en tant que centres cruciaux d'une activité socio-technologique complexe et leurs typologies ; des modèles de développement fondé sur la connaissance élaborés par les chercheurs ; le Modèle de la Recherche Scientifique, *Design Science Research*, en tant que philosophie et méthode de résolution de problèmes ; la méthode Delphi comme processus systématique permettant d'avoir un regard expert sur la prise de décisions et l'élaboration de théories dans des situations complexes ; le rôle des modèles de maturité en tant qu'outils facilitant la compréhension de situations complexes et visant à soutenir l'évaluation et les mesures

correctives ; et finalement, les problèmes pernicioeux, ou *wicked problems*, et leurs incidences et liens avec les objectifs internationaux stratégiques de développement.

1.2.1 La Connaissance et les Actifs Immatériels comme Nouvelles Ressources Stratégiques Sociétales

A bien des égards, comme le montre le Tableau 3, la production fondée sur la connaissance s'avère intrinsèquement différente des autres formes de production, qui traditionnellement façonnent et définissent les sociétés et les économies (Carillo, 2014). Les économistes décrivent la connaissance comme un bien public de par ses caractéristiques de consommation non-rivales et sa non-exclusivité (Menell, 1999) et ses propriétés cumulatives (Foray, 2006). Ensemble, ces trois caractéristiques font de la connaissance une ressource infiniment renouvelable et immatérielle dont la valeur augmente lorsqu'elle est partagée, qui sert de base à l'accroissement du savoir à venir et dont la consommation est très difficile à entraver. Ces propriétés de la connaissance, un actif immatériel, contrastent nettement avec celles des actifs matériels. Nos économies et sociétés ont été majoritairement confrontées à des biens matériels dont la valeur augmente avec la rareté ; de ce fait, cette perspective a été essentielle pour l'élaboration de concepts tels que celui de propriété, de compétition et de responsabilité sociale (Castell, 2010 ; Drucker, 2008 ; Lessig, 2001). Dès lors, le rôle accru de la connaissance et ses caractéristiques distinctives questionnent les valeurs et l'efficacité des systèmes et valeurs actuels.

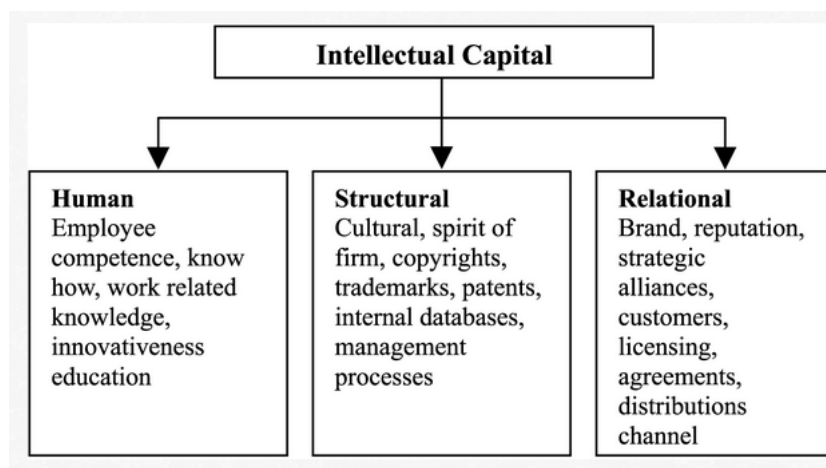
Exposition 5 : Attributs de la Production Fondée sur la Connaissance (Carrillo, 2014)

Attributs	Caractéristiques
Non-rivalité	La possession et l'utilisation d'un bien par un agent n'entraîne pas sa consommation et pour cela n'empêche pas la possession et l'utilisation du même bien par un autre agent
Non-exclusivité	L'accès à un bien par un agent n'empêche un autre agent d'y accéder
Non-rareté	Un bien peut être reproduit indéfiniment sans frais supplémentaires
Non-incrémentiel	La valeur locative d'une succession d'unités de produits x_i, x_{i+1}, \dots, x_n ne diminue pas en fonction des itérations du cycle de production
Capital – convertibilité du travail	Le travail peut simultanément fonctionner comme capital et devenir le facteur le plus important (ex : entreprises « <i>talent-intensive</i> »)
Ubiquité	Un bien peut être simultanément accessible à n'importe qui, n'importe où
Temps & dépendance à l'égard du contexte	Un bien peut perdre de sa valeur avec le temps et peut parfois devenir obsolète peu de temps après avoir été mis à disposition
Connectivité	La valeur totale d'un réseau augmente proportionnellement à la racine carrée du nombre de membres
Intangibilité	La valeur de marché d'une société peut (largement) surpasser sa valeur comptable
Externalités	Les conséquences imprévues, aussi bien positives que négatives peuvent (largement) surpasser la valeur de production d'un bien

L'appréhension des processus véhiculés par l'information et la connaissance en tant que principales sources de valeur ajoutée a amené les organisations à se focaliser sur des attributs immatériels, comme les capacités et les compétences de leurs employés, la culture d'entreprise, la propriété intellectuelle (IP), l'innovation et l'image de la marque parmi d'autres systèmes de procédés commerciaux (Davenport & Grover, 2001 ; Edvinsson & Malone, 1997 ; Marr, 2005 ; Stewart, 1997). Les attributs immatériels tels que ceux cités précédemment, que les organisations cherchent de plus en plus à développer pour leur croissance et réussite actuelle et future, sont désignés sous le terme de capital intellectuel (Dalkir, 2011 ; Stewart, 1997).

Le capital intellectuel est prédisposé à un bel avenir ; par conséquent, il existe un décalage entre les investissements et les bénéfices qu'il génère (Bontis, 2004 ; Käpylä et al. 2012 ; Lin & Edvinsson, 2011 ; Malhotra, 2003 ; Stam & Andriessen, 2009). Les répercussions associées aux processus de connaissance et à leur comportement non-linéaire pourraient donner naissance à des propriétés émergentes. Ces effets font en sorte que les résultats des investissements et des activités soient incertains et complexes et peuvent alors rendre compte des limites de la compréhension et de la reconnaissance de l'importance des actifs immatériels en dehors du cadre universitaire (López Ruiz et al., 2014 ; Salonijs & Lönnqvist, 2012).

Un ensemble de perspectives concernant le capital intellectuel ont émergé en lien avec les objectifs et les pratiques de différentes disciplines. Les définitions, approches et méthodes d'évaluation du capital intellectuel peuvent être équivalentes ou fortement contrastées (Marr, 2005). Divers schémas de classification et d'identification des composants du capital intellectuel existent, mais le plus couramment utilisé – comme le montre l'Exposition 6 – détermine trois sous-catégories principales de capitaux, à savoir le capital humain, structurel et relationnel (Dalkir, 2011). La façon dont ces composants interagissent joue un rôle décisif dans l'avènement et la détermination des formes de valeur produites. De plus en plus les nations, les villes et les régions cherchent à identifier et mettre en avant leurs actifs immatériels (Lin & Edvinsson, 2011).



Exposition 6 : Trois composants du Capital Intellectuel. Il est essentiel pour ces trois composants d'interagir et de fonctionner en harmonie afin d'atteindre une performance optimale. [Image fournie par Strategybuilders.eu]

Néanmoins, on observe une prise de conscience grandissante relative au paradigme de la société post-industrielle fondée sur la connaissance. Ceci peut être mis en évidence par les engagements considérables de ressources financières, personnelles et stratégiques visant l'exploitation du potentiel de la connaissance pour répondre aux enjeux économiques et sociaux. Ces engagements incluent la Stratégie de Lisbonne adoptée en Europe en 2000 ; dont le but est de faire de l'Europe le concurrent majeur de l'économie fondée sur la connaissance par le biais d'une croissance économique durable et d'une plus grande cohésion sociale (UE, 2000 ; COE, 2011) ; et le Sommet Mondial sur la Société de l'Information (SMSI) organisé en deux temps, à Genève en 2003 et à Tunis en 2005.

Le fait que l'économie et la société de la connaissance relèvent en grande partie d'un phénomène social (Carrillo & Batra, 2012) implique le dépassement de la focalisation actuelle sur les dimensions économiques et technologiques et l'attribution d'une importance plus grande aux aspects humains. La prise de conscience et l'appréhension progressive de la connaissance en tant que ressource renouvelable à l'infini pourrait entraîner un bouleversement des mentalités pour sortir d'une logique de jeu à somme nulle. Au sein de ce contexte, des objectifs tels que les droits de l'homme, l'équité et la paix seraient en mesure d'être plus facilement conçus et atteints.

1.2.2 Les villes dans l'ère post-industrielle

Les villes concentrent un capital humain, social et structurel, de ce fait la mesure de l'influence d'une ville au niveau national, régional et international peut fournir des informations sur sa capacité à favoriser ces ressources. Cette capacité influencera aussi la viabilité des villes et déterminera leurs possibilités d'attirer ou de perdre des citoyens face à la mobilité accrue du capital, du travail, de l'information et de la connaissance déclenchée par la mondialisation.

Alors que les opportunités de participation économique, sociale et politique, entre autres formes d'engagement, sont nombreuses dans les villes, il est possible que les habitants ne bénéficient pas d'une égalité d'accès à ces avantages, ou qu'ils ne soient pas en mesure d'en jouir. UN-HABITAT (2014) rapporte qu'environ un tiers des habitants des pays en développement vivent dans des bidonvilles où ils sont confrontés à des infrastructures inadéquates pour répondre aux problèmes d'assainissement et d'évacuation des déchets solides qui présentent un risque plus élevé d'incidences néfastes pour la santé. L'incapacité à surmonter des inégalités profondément ancrées peut conduire à un effondrement de la cohésion sociale et à la fabrication de formes de précarité (Borja & Castells, 1997) au détriment d'une vie urbaine harmonieuse.

Une planification urbaine et un réseau de transports inadéquats peuvent rendre très difficile la circulation de personnes, de biens et de services et entraver de façon significative toute une série d'activités économiques et conduire à une stagnation (UN-HABITAT, 2014). Les villes contribuent de manière disproportionnée au réchauffement climatique puisqu'elles sont responsables d'environ 70% des émissions nocives de gaz à effet de serre (UN-HABITAT, 2011). Les villes présentent donc un risque accru d'être confrontées aux conséquences du changement climatique (OCDE, 2013 ; UN-HABITAT, 2014). On estime que davantage de conflits auront lieu dans les zones urbaines (Sassen, 2012). Si elles ne sont pas traitées correctement, ces problématiques peuvent empêcher les villes et les nations d'atteindre leur plein potentiel.

L'influence grandissante des villes leur confère un nouveau pouvoir politique et économique dans la participation aux changements planétaires qui pourrait conduire à des rivalités entre les villes et les gouvernements nationaux (Borja & Castells, 1997; Sassen, 2012). Dans certains cas, les gouvernements nationaux peuvent retarder les réformes ou les autorisations requises par les autorités municipales, dans le but d'exercer une influence politique ou de servir des intérêts politiques (Green, 2012 ; Goodfellow & Titeca, 2012 ; Goodfellow, 2012). Ainsi, pour éviter ce contexte lié au rôle et à la contribution et évolution prévus des villes, les hypothèses et pratiques actuelles se doivent d'être réévaluées.

Castells introduit le concept de villes informationnelles dans son livre *The Informational City* (1989), qu'il définit comme une ville dont l'organisation spatiale est façonnée, définie et transformée continuellement par des flux de pouvoir, financiers et d'information. Ces flux s'appuient sur les réseaux mondiaux de télécommunication.

Selon Castells, ces flux manifestent leur influence de trois façons différentes : à savoir, en distribuant spatialement le travail, en créant des milieux d'innovation et en facilitant la décentralisation. Cette situation, d'après Castells, conduit à des asymétries de l'information et du pouvoir, à des problématiques de réduction des inégalités sociales et à une restriction des opportunités de mobilité sociale. L'établissement de centres de connaissance ou de contrôle

peut avoir pour conséquence de créer des pôles d'attraction du talent en empêchant ainsi les autres domaines d'entrer dans la compétition pour le capital de compétences humaines.

Dans leur publication centrale, *Local & Global: Management of cities in the information age*², (1997), Jordi Borja et Manuel Castells cherchent à fournir des solutions aux enjeux actuels. Ils y envisagent des villes où les sociétés, plus puissantes, interagissent au sein de processus globaux et locaux afin d'arbitrer les relations économiques, technologiques et culturelles basées sur des systèmes soutenant l'efficacité et l'équité. Jordi et Castells (1997) envisagent alors des rôles clés pour les villes conçues en tant que : a) centres opérationnels locaux pour la gestion de la productivité économique et de la compétitivité, b) centres pour l'accompagnement socio-culturel et l'intégration et c) agents actifs pour assurer la représentation politique et le pouvoir décisionnel des citoyens. Selon les auteurs, les villes possèdent des attributs qui leur fournissent des leviers essentiels pour diffuser une influence globale bien au-delà de leurs territoires. Pour ce faire, les villes doivent se focaliser sur trois domaines : a) soutenir leur productivité et compétitivité économique en améliorant le bien-être social des citoyens – par exemple en fournissant des services de santé et des services urbains appropriés – en construisant un capital humain par le biais de l'éducation et en garantissant des infrastructures matérielles adéquates ; b) améliorer les conditions d'intégration socio-culturelle et assurer la représentation politique de tous les groupes dans les procédés de prise de décision.

Les villes doivent s'efforcer de développer les conditions nécessaires à une action conjointe. Au cœur de cette réussite, réside la nécessité pour les villes de développer le capital humain de leurs citoyens. L'hétérogénéité accrue des sociétés et l'importance de la cohésion sociale, associée à la nature locale des interactions, met en évidence le besoin de compétences en lien avec le savoir-être et le savoir-faire. Les investissements qui visent à soutenir l'ensemble du spectre des besoins et des droits de l'homme – civils, culturels, politiques, économiques et sociaux – tout comme l'attention portée à l'environnement, aux infrastructures et aux systèmes de gouvernement sont en mesure d'assurer les conditions d'émergence d'une citoyenneté engagée et puissante. De tels fondements fourniront les bases d'une gestion consciente des flux informationnels, stratégiques, financiers et économiques de Castell.

Les villes des pays en développement se doivent de prendre conscience que les solutions en provenance des pays développées peuvent ne pas être adaptées à leur contexte (Biao et al., 2013 ; Jenkins, 2013 ; Roy, 2005 ; Schluter, 2012 ; Sietchiping et al., 2012). Une coopération accrue entre les institutions académiques, les gouvernements et les autres acteurs des pays en développement est essentielle au partage d'expériences et aux capacités de soutien en mesure de répondre à des enjeux urbains uniques.

² Local & Global : Gestion des villes à l'ère informationnelle

1.2.3 Modèles de développement fondé sur la connaissance issus de la littérature scientifique

Plus de 30 modèles de développement fondé sur la connaissance aux finalités et niveaux de couverture variés ont été créés afin de mener des évaluations à l'échelle nationale, régionale et à l'échelle des villes et des villages (Batra, 2013 ; Garcia, 2008 ; Bounfour & Edvinsson, 2005 ; Käpylä et al., 2012 ; Sharma et al., 2008, 2009 ; UN-HABITAT, 2002, 2004, 2013 ; Yigitcanlar et al. 2014, 2014). Ergazakis et Metaxiotis (2011) pointent des facteurs tels que les variations dans les conceptualisations de la connaissance et des traditions disciplinaires comme influençant les diverses approches visant à modéliser, analyser et évaluer l'utilisation et le rôle de la connaissance dans le soutien au développement de l'espace urbain. Une revue critique de ces modèles dans la littérature scientifique a été entreprise pour ceux présentant des informations disponibles sur leurs bases théoriques ainsi que sur leur méthodologie liée au développement et la dérivation des indicateurs. Ces modèles ont été appliqués au moins dans une ville, une région ou une nation, principalement dans les pays en développement. Malgré le fait que les développeurs de ces modèles affirment entreprendre une approche holistique, dans la plupart des cas la dimension économique est priorisée. La plupart des modélisateurs revendiquent le fait de s'être focalisés sur l'identification d'attributs uniques d'un lieu fournissant des avantages de connaissance stratégiques et distincts. Cependant, des facteurs tels que la disponibilité de données secondaires comparables ainsi que l'intérêt pour l'étalonnage ont conduit à la sélection et à l'utilisation d'indicateurs promouvant l'uniformité. Les modèles étudiés font appel à différents cadres conceptuels tels que le MACKCI, Most Admired Knowledge City³, le Knowledge Village Capital Framework⁴ (KVCF) de Batra, UN-HABITAT's City Development⁵, aux Index du Urban Government & City Prosperity⁶, le Knowledge-Based Urban Development Assessment Model⁷ (KBUD/AM), Sharma et al.'s (2008, 2009) ou l'Analytical Knowledge Society Framework⁸, les résultats du National Intellectual Capital Performance Approach⁹ de Käpylä et al.'s, le Cities Intellectual Capital Benchmarking System¹⁰ (CICBS) de Marti, ou le Knowledge City Index¹¹ (KCI) et le Model for Estimating the Intellectual Capital of Cities¹² (MEICC)

³ Ville de la Connaissance la Plus Admirée

⁴ Cadre pour l'analyse du Capital Connaissance des Villages

⁵ Développement urbain UN-HABITAT

⁶ Index du Gouvernement Urbain & de Prospérité de la Ville

⁷ Modèle pour l'Evaluation du Développement Fondé sur la Connaissance Urbain

⁸ Cadre Analytique de la Société de la Connaissance

⁹ Approche de la Performance du Capital Intellectuel National

¹⁰ Système d'Etalonnage du Capital Intellectuel des Villes

¹¹ Index de la Ville de la Connaissance

¹² Modèle pour l'Estimation du Capital Intellectuel des Villes

1.2.4 Aperçu des modèles retenus

Les modèles examinés, à l'exception des modèles UN-HABITAT, ont été principalement développés par des chercheurs spécialisés dans les domaines du développement fondé sur la connaissance et du capital intellectuel. Une variabilité considérable en termes d'étendue de l'information fournie sur leurs dérivations méthodologiques et théoriques est observée. Par exemple, des informations détaillées sont disponibles sur le MAKCI, qui se fonde sur un cadre taxonomique et théorique connu sous le nom de *Generic Capitals* ou Capitaux Génériques, développé par le World Capitals Institute¹³ (WCI), l'organisation ayant fourni ce modèle. Des analyses statistiques exhaustives incluant des régressions logistiques ont été mises en œuvre afin de développer une plus grande compréhension et confiance dans l'index développé. Des publications annuelles ainsi qu'un site web fournissant des ressources existent par ailleurs. Une attention importante a été portée au développement d'un réseau mondial d'experts spécialisés dans son usage. Les modèles développés par UN-HABITAT semblent secondaires lorsque l'on prend en considération la disponibilité des informations sur leur développement. Cependant, à l'inverse des modèles MAKCI, les modèles d'UN-HABITAT semblent répondre davantage aux critères des plans de développement internationaux et faire part d'une plus grande disponibilité de données relatives à des objectifs spécifiques plutôt qu'à des considérations théoriques dans la détermination des composantes du modèle. Les autres modèles sont davantage focalisés sur le capital intellectuel bien que l'Analytical Knowledge Society Framework de Sharma et al.'s (2008, 2009) fasse référence au cadre instauré par les Sociétés de la Connaissance de l'UNESCO.

On observe une variation considérable des types de villes au sein desquelles ces modèles ont été développés ou appliqués. En ce qui concerne le MAKCI, les villes ciblées sont celles dont la population se situe entre 500 000 et 3,5 millions d'habitants désignées en tant que régions urbaines de la connaissance et celles dont la population est supérieure à 3,5 millions d'habitants qualifiées de métropoles de la connaissance. Compte tenu de son mandat, UN-HABITAT offre une couverture complète des villes majeures de ses Etats Membres, indépendamment de leur taille, tandis que les modèles comme le MEIC et le KCI ont des exigences élevées en matière de données à fournir et ont été spécifiquement conçus pour les pays développés. Le CICBS de Marti se focalise sur deux villes méditerranéennes en Espagne et en Italie avec une population inférieure à 100 000 habitants. Contrairement aux autres modèles, le KVCF de Batra se focalise sur des villages en Inde.

En ce qui concerne les applications pratiques sur le terrain, les variations sont à nouveau considérables. Le MAKCI est en vigueur depuis 2007 et a été appliqué par le biais de tests sur le terrain à au moins 57 villes et les modèles UN-HABITAT à au moins 200 villes. Le modèle

¹³ Institut des Capitaux Mondiaux

KBUD/AM de Yigitcanlar a quant à lui été testé sur 10 villes environ et le modèle de Marti sur 2 villes. Des tests plus limités ont été pratiqués avec le KVCF de Batra, comme avec l'Analytical Knowledge Society Framework de Sharma et al.'s (2008, 2009) et avec le National Intellectual Capital Performance Approach de Käpylä et al.'s. Les modèles restants s'avèrent avoir été implémentés de façon théorique en utilisant des données secondaires des villes ciblées.

Plus de 50% des modèles utilisent les panels Delphi dans le cadre du développement du modèle et/ou pour les procédés de validation. Etant donné le nombre relativement restreint de villes analysées par la plupart de ces modèles, les méthodes statistiques font part d'une utilité relativement limitée. L'utilisation de ces modèles pour l'étalonnage et le classement des villes semble être un facteur significatif, en effet il apparaît qu'une plus grande importance est accordée à la comparabilité des villes plutôt qu'à la recherche d'identification de forces ou de particularités uniques. Le MAKCI et les modèles Analytical Knowledge Society Framework et KBUD/AM incorporent une évaluation qualitative significative permettant ainsi aux aspects de savoir-faire et de savoir-être d'être relevés. Ces modèles favorisent tous des relations entrées-sorties et les évaluations longitudinales permettent ainsi une analyse sur le long terme des villes étudiées.

Au vu de ce qui précède, faire fonctionner de façon opérationnelle le Cadre Conceptuel des Sociétés des Connaissances de l'UNESCO en tant que base d'un modèle de développement fondé sur la connaissance nécessiterait, au minimum : i) D'établir ou de démontrer des liens conceptuels plausibles entre le cadre conceptuel de l'UNESCO et le développement fondé sur la connaissance ou les paradigmes du capital intellectuel ; ii) De délimiter ou de situer empiriquement les sociétés de la connaissance que l'UNESCO cherche à évaluer afin qu'elles puissent être observées ou mesurées, iii) D'identifier dans la littérature existante les indicateurs des notions contenues dans le cadre de l'UNESCO tout comme les indicateurs cibles ou les mesures des enjeux sociétaux à prendre considération dans les sociétés de la connaissance ; iv) De développer un modèle conceptuel reliant les entrées, les sorties et les processus aux objectifs stratégiques poursuivis ; et v) De sélectionner des processus pour la validation de ce modèle.

La focalisation sur les pays en développement et les études publiées antérieurement fait ressortir la nécessité de confronter le modèle à la réalité contextuelle des villes auquel il a été appliqué (Biao et al., 2013 ; Jenkins, 2013 ; Roy, 2005 ; Schluter, 2012 ; Sietchiping et al., 2012). Des limites dans des domaines tels que les capacités statistiques nationales et les capacités institutionnelles diminuent significativement la disponibilité et la qualité des données (Atiqul Haq, 2012 ; UNDESA, 2012 ; UN-HABITAT, 2014). Par conséquent, dans cette étude, le développement du modèle met l'accent sur l'utilisation de données qualitatives qui peuvent être obtenues en interrogeant des experts reconnus de la ville et de son contexte spécifique ainsi que du contexte des pays en développement. Les modèles de maturité qui sont

adaptables à de tels cas et qui soutiennent l'évaluation et les démarches d'amélioration sont particulièrement pertinents (de Bruin et al., 2005 ; Maier et al., 2009 ; Wendler, 2012).

Problèmes pernicioeux

Dans leur article de référence, Rittel et Weber (1973), chercheurs spécialisés respectivement dans la conception et la planification des villes, affirment que les solutions aux problèmes des sciences naturelles sont définissables et peuvent être trouvées de façon analytique ou autre. En revanche, les problèmes appartenant au spectre de la planification sociale et gouvernementale sont toujours nécessairement mal définis et doivent alors dépendre d'un jugement politique pour être solutionnés. Ces différentes classes de problèmes qui ne peuvent pas être analysés de façon exhaustive, pour lesquelles aucune solution tranchée ne peut être développée à l'avance, sont désignées en tant que *wicked problems*, ou problèmes pernicioeux (Dalsgaard, 2014 ; Ramaley, 2014 ; Rittel & Weber, 1973).

Comme Rittel et Weber l'expliquent, l'utilisation du terme « *wicked* », n'est pas liée au statut éthique ou moral du problème à résoudre. Il tend plutôt à différencier cette catégorie de problèmes à « apprivoiser » des problèmes tels qu'« accomplir la tâche finale en cinq étapes.... [où] la mission est claire » (Rittel & Weber, 1973, p. 160). Par conséquent, pour les problèmes à apprivoiser, il n'est possible de déterminer que le problème a été résolu ou non qu'une fois que l'intervention a été réalisée.

Ramaley (2014), entrevoit les enjeux sociétaux contemporains tels que le développement durable, le changement climatique, les questions de santé, de propreté de l'eau, la paix et les conflits comme des exemples de problèmes pernicioeux mondiaux. Les enjeux relatifs à l'urbanisation, aux bidonvilles, aux questions de cohésion sociale et d'infrastructure inadéquate, entre autres, auxquels les villes des pays en développement font face, relèvent des problèmes pernicioeux.

Camillus (2008) présente quelques-unes des raisons qui expliquent pourquoi les solutions politiques deviennent importantes pour résoudre les problèmes de gouvernance et de planification sociale. Tout d'abord, à l'échelle sociale, les problèmes impliquent un nombre important d'acteurs motivés par des valeurs et des priorités différentes. Par conséquent, ceci soulève immédiatement des questions sur la façon dont le problème et les réponses doivent être conceptualisés et sur la façon dont cela affecte le statut quo actuel, c'est-à-dire, qui gagne ou qui perd et qui est avantagé ou désavantagé ? Deuxièmement, les racines du problème sont souvent complexes et enchevêtrées, dès lors, comme dans le cas de l'hydre mythologique il s'avère difficile de savoir où doit commencer la réponse. Un troisième enjeu mis en évidence par Camillus s'apparente au second, à savoir que les interventions sont souvent à l'origine de changements inattendus dans la situation. Dans le cas de l'hydre mythologique, trancher une des têtes de la créature entraîne le remplacement de la tête initiale par de nombreuses têtes.

Quatrièmement, ces problèmes sont la plupart du temps, en totalité ou en partie, sans précédents. Par exemple, alors que l'augmentation de la fréquentation touristique et la suppression des obstacles au voyage est souhaitée, de nombreux pays s'inquiètent aussi de l'éventuelle intensification de la traite des êtres humains et de la migration illégale ainsi que du terrorisme. Cependant, rares sont les modèles, analogies, prescriptions ou expériences dont les pouvoirs décisionnels peuvent rapidement tirer parti pour offrir une ligne directrice. Finalement, en ce qui concerne les problèmes de planification sociale et gouvernementale, il n'existe aucune indication claire tendant vers une solution adéquate; par conséquent, toute approche suivie fait part d'une possibilité de résultats insatisfaisants et de perte de capital politique.

Selon Rittel et Weber (1973), il n'est pas possible d'apprivoiser les problèmes pernicioeux ; seuls des facteurs d'atténuation peuvent être pris en considération. D'après leur perspective, les changements démographiques tels qu'une hétérogénéité sociale accrue sont susceptibles d'augmenter les rivalités intergroupe et de rendre les consensus et les compromis substantiellement plus compliqués. En reconnaissant que les experts et les décideurs politiques font aussi part de biais qui influencent leurs jugements et décisions, Rittel et Weber (1973) ne pensent pas non plus que la planification centrale est l'idéal. Ils estiment que le soutien de la capacité des citoyens à exprimer et à atteindre leurs objectifs individuels et l'engendrement d'une prise de conscience de la réalité des sociétés et de leur dynamisme constituent le mieux que l'on puisse faire.

Rittel est appuyé par Rith et Dubberly (2006) dans le fait de promouvoir le rôle d'un dialogue robuste et même celui d'une argumentation pour parvenir à des définitions communes et à des actions et objectifs communs. Selon le point de vue de Rittel, ce n'est qu'en aboutissant à de tels consensus que les problèmes pernicioeux peuvent être apprivoisés. D'après Rith et Dubberly, Rittel reconnaît le rôle clé joué par les forces politiques dans la construction d'une entente, d'une collaboration et d'une action de soutien. D'après Rittel, les approches politiques détiennent aussi un rôle important dans le fait d'assurer un engagement continu de la part d'une base élargie de parties prenantes. Par ailleurs, alors que le nombre de variables à prendre en considération excède invariablement les capacités cognitives d'un acteur isolé ou d'un groupe de parties prenantes, la dimension politique peut assurer des efforts coordonnés et soutenus.

La littérature scientifique concernant les problèmes pernicioeux s'avère particulièrement pertinente pour répondre aux enjeux stratégiques internationaux tels que les Objectifs du Millénaire pour le Développement (OMD) et les Objectifs de Développement Durable Post-2015 auxquels toutes les villes, spécialement celles des pays en développement, doivent faire face. Les stratégies énumérées pour répondre à ces enjeux mettent explicitement l'accent sur l'importance d'approches globales, informées et inclusives et la nécessité d'efforts coordonnés

sur le long terme. Il semble évident que le succès de tout effort mené en ce sens dépendra des capacités et des compétences des individus tout comme des structures sociétales pour leur organisation et pour celle des processus employés pour résoudre les problèmes identifiés. La focalisation sur des visions communes, des objectifs partagés, l'engagement, le partage équitable des bénéfices et du risque, et l'exploitation de connaissances pertinentes reflètent les valeurs portées par le Cadre Conceptuel des Sociétés de la Connaissance de l'UNESCO. La nature des problèmes pernicioeux suggère alors que les sociétés de la connaissance ne sont pas une finalité ; mais plutôt un état sociétal dynamique caractérisé par l'engagement et l'innovation et soutenu par une prise de décision et une résolution de problèmes au niveau collectif.

METHODOLOGIE ET MODELE DE RECHERCHE

Cette étude est centrée sur la construction d'un modèle, sa validation, et son application à un contexte problématique déterminé, et sur l'évaluation ultérieure de son adéquation et valeur pour les acteurs politiques des villes des pays en développement. De bien des façons, ce processus est exploratoire tout comme le domaine d'étude de l'enquête, le développement fondé sur la connaissance, qui est un sous-domaine ayant émergé récemment et ne disposant pas de traditions de recherche établies (Ergazakis & Metaxiotis, 2011) et pour lequel il n'existe pas de vaste corpus de recherches et de résultats dans la littérature qui puisse être appliqué puisque la plupart des publications s'intéressent aux pays développés (Jenkins, 2013 ; Roy, 2005 ; Schluter, 2012). Le Cadre Conceptuel des Sociétés de la Connaissance de l'UNESCO, malgré son caractère prescriptif, met l'accent sur la pertinence du contexte, l'adaptation et la mise en œuvre opérationnelle ainsi que sur l'ouverture à des points de vue mondiaux et multiples. Ces orientations sont en phase avec la philosophie du Modèle de la Recherche Scientifique, ou *Design Science Research*, qui offre une vision pragmatique liée à la création d'outils, de méthodes et de modèles de résolution de problèmes (Hevner, 2007 ; Hevner & Chatterjee, 2010 ; Hevner et al., 2004 ; Simon, 1996).

Il a été démontré dans la Revue de la Littérature que la ville informationnelle, définie par Castell, représente une catégorie plus large qui englobe les villes de la connaissance. En s'appuyant sur ces caractéristiques partagées, les villes sont conçues en tant que notions sociotechniques aux propriétés analogues à celles des systèmes d'information. Ceci fournit une base pour l'application de paradigmes épistémologiques et ontologiques et de méthodes de recherche issues du domaine des systèmes de l'information dans l'optique de la construction d'un modèle pour la compréhension du développement fondé sur la connaissance des villes.

Le Modèle de la Recherche Scientifique est une approche bien établie dans le domaine des systèmes de l'information (Dalsgaard, 2014 ; Hevner et al., 2014 ; Hevner & Gregor, 2012 ; Hovorka, 2009 ; Kuechler & Vaishnavi, 2012 ; Otto & Österle, 2012 ; Vaishnavi & Kuechler,

2009). Vaishnavi et Kuechler (2009) décrivent l'ontologie, l'épistémologie, la méthodologie et l'axiologie du Modèle de la Recherche Scientifique qui de par ses racines pragmatiques fait part d'une ressemblance considérable avec le paradigme pragmatique classique. Le Tableau4 fournit une comparaison du pragmatisme et du Modèle de la Recherche Scientifique pragmatique.

La perspective ontologique du Modèle de la Recherche Scientifique considère la réalité comme localisée dans une situation donnée et évoluant avec une réalité en constante mutation (Dalsgaard, 2014 ; Dewey, 1998 ; Vaishnavi & Kuechler, 2009). La situation se compose du sujet et de son environnement socio-physico-technique. Cet environnement socio-physico-technique inclue les autres personnes, des appareils et des objets technologiques et l'espace physique, de même que l'espace construit socialement et défini par les règles socio-culturelles, les normes et les attentes. Les éléments compris dans cette situation interagissent avec les autres éléments dans l'espace et avec le sujet.

Exposition 7 : Comparaison du pragmatisme et de l'orientation du modèle philosophique (adapté de Dalsgaard, 2014 ; Saunders et al., 2011 ; et Vaishnavi & Kuechler 2009)

	Pragmatisme	Modèle de la Recherche Scientifique Pragmatique
Ontologie : le point de vue du chercheur sur la nature de la réalité ou de l'être	Point de vue externe et multiple adopté pour permettre de mieux répondre à la question de recherche	Etats mondiaux alternatifs, multiples et contextuellement situés qui sont socio-technologiquement actifs
Epistémologie : le point de vue du chercheur sur ce qui constitue une connaissance acceptable	L'un ou les deux phénomènes observables et la signification objective sont en mesure d'offrir une connaissance acceptable en fonction de la question de recherche. L'accent est mis sur les recherches appliquées pratiques intégrant différentes perspectives pour contribuer à l'interprétation des données	Connaître par la réalisation: une construction objectivement restreinte dans un contexte. Des délimitations itératives révèlent la signification
Axiologie : le point de vue du chercheur sur le rôle des valeurs dans la recherche	Les valeurs jouent un rôle important dans l'interprétation des résultats, le chercheur adopte à la fois des points de vue objectifs et subjectifs	Le contrôle, la création et le progrès qui visent à soutenir l'amélioration et la compréhension
Techniques de recueil de données le plus souvent utilisées	Des modèles méthodologiques mixtes ou multiples, quantitatifs et qualitatifs	Un processus développemental qui vise à mesurer l'impact de l'objet créé sur le système

En cherchant à apporter un changement dans leur environnement pour atteindre le résultat escompté, les concepteurs basent leur action sur des idées reçues qui peuvent s'articuler de façon implicite ou explicite (Dalsgaard, 2014 ; Dewey, 1998 ; Vaishnavi & Kuechler, 2009). Les résultats de ces actions, associés avec une pratique réflexive servent soit à renforcer, enrichir ou rejeter les théories soutenues par les concepteurs et leur permettent de mieux prendre conscience de leurs croyances (Schön, 1987). La connaissance acquise grâce à cette interaction éclaire donc l'intervention future. Ainsi, le point de vue épistémologique est un

point de vue au sein duquel pratique et théorie s'éclairent mutuellement et où l'apprentissage devient une réponse permanente et évolutive au changement.

Le concepteur ou le chercheur fait partie de la situation et de par sa présence est en mesure de transformer cet espace et d'être transformé. L'action est donc focalisée sur le fait de comprendre dans le but de mieux appréhender la façon dont les actions peuvent être dirigées vers un objectif final déterminé. Cependant, la réalisation de l'objectif n'est pas simplement fonctionnelle mais s'avère être un processus profondément sociotechnique. Ceci devient évident lorsqu'on se demande : Utilité pour qui ? Utilité avec quelle finalité et dans quel but ? Utilité quand, où, comment ? Le Modèle de la Recherche Scientifique pragmatique valorise donc la transformation, l'évaluation de la connaissance et des concepts qui vise une amélioration (Dalsgaard, 2014 ; Vaishnavi & Kuechler, 2009).

En se basant sur la situation spécifique et ses contraintes, des approches subjectives et objectives sont employées dans le Modèle de la Recherche Scientifique.

1.2.5 Techniques de recueil des données

Le cadre de Yin (voir Exposition 8) a été utilisé pour sélectionner des méthodes appropriées pour le recueil des données de la recherche. Sur cette base, des enquêtes, des analyses d'archives et des études de cas ont été considérés comme appropriés.

Exposition 8 : Situations pertinentes pour différentes méthodes de recherche (Yin, 2014, pp. 9)

METHOD	(1)	(2)	(3)
	Form of Research Question	Requires Control of Behavioral Events?	Focuses on Contemporary Events?
Experiment	how, why?	yes	yes
Survey	who, what, where, how many, how much?	no	yes
Archival Analysis	who, what, where, how many, how much?	no	yes/no
History	how, why?	no	no
Case Study	how, why?	no	yes

L'analyse d'archives a impliqué les revues classiques du matériel archivé, le processus de revue de la littérature tout comme des revues limitées de la presse écrite et électronique concernant les villes sélectionnées pour l'étude. L'analyse d'archives a soutenu la construction d'un développement fondé sur la connaissance et de modèles de maturité et a permis au chercheur de mieux comprendre le contexte des villes. Les méthodes d'enquête employées furent les suivantes : des panels Delphi, des entretiens semi-structurés utilisant des guides d'entrevue, ainsi que le modèle de maturité lors des tests sur le terrain. Des études de cas comparatives ont été développées pour les villes sélectionnées, basées sur un travail de terrain et soutenues par un matériel obtenu par d'autres moyens.

1.2.6 Fiabilité et Validité de la Recherche

L'étude emploie un dessin de recherche à méthodes mixtes qui rassemble l'élaboration du modèle avec des approches qualitatives et quantitatives pour évaluer l'utilisation et l'application du modèle développé dans les situations-problèmes qu'il cherche à examiner. Les questions de validité et de fiabilité sont pertinentes pour cette recherche dans le sens où celle-ci cherche à développer un nouvel instrument pour une utilisation relevant du contexte du développement fondé sur la connaissance. La capacité du modèle à mesurer les notions qu'il cherche à évaluer ainsi que sa pertinence pour les utilisateurs sont des marqueurs critiques de son utilité et de son applicabilité.

1.2.7 Développement du Modèle de Maturité

Le développement du modèle de maturité a été orienté par les lignes directrices de Mettler (2009) et Hevner et al., (2004) et tient compte des recommandations de la revue systématique du développement et des modèles de maturité de Wendler (2012). Les publications existantes l'ont nourri. Des publications scientifiques ainsi que des sources de littérature grise appartenant à différentes disciplines ont été utilisées pour élaborer les indicateurs et la méthodologie visant à définir les hypothèses du modèle. Ce processus est entièrement décrit et illustré au Chapitre 4. Ces processus améliorent la validité du contenu.

1.2.8 Validation du modèle

La validation du modèle implique trois phases: a) la présentation à des experts du domaine à l'UNESCO pour recevoir leurs commentaires, b) le test pilote du modèle dans une des villes sélectionnées et c) l'utilisation du modèle avec un panel Delphi. Ces trois approches servent toutes en tant qu'approches successives, itératives, visant l'amélioration et fournissent principalement une façon d'évaluer le contenu et la validité du modèle et d'aboutir à une triangulation. Le test pilote sur des sites sélectionnés fournit les moyens d'évaluer la pertinence du modèle et donc sa crédibilité. Des critères clairs sont établis *a priori* pour la finalisation de l'étude Delphi.

Un échantillonnage raisonné et par réseau (boule de neige) a été utilisé pour sélectionner des participants pour la validation du modèle. Un ensemble de critères pertinents a été établi et des participants éventuels identifiés. En incluant des participants de différents groupes de parties prenantes, cela a permis à une variété de perspectives d'éclairer le processus. L'utilisation de protocoles de recherche a fourni une structure et une uniformité. La prise de notes, l'enregistrement des sessions et le partage de ces dernières avec les participants ont permis de soutenir la justesse et la crédibilité des résultats. Ces facteurs contribuent à la fiabilité et à la validité de l'exercice.

Le succès de la technique Delphi s'avère largement dépendant de la qualité des experts impliqués dans l'étude, de la participation continue des experts tout au long de l'étude et de la possibilité de disposer d'un panel de taille minimum comprise entre 10-18 personnes. Pour garantir le respect de ces critères de qualité, des efforts considérables ont été réalisés en utilisant des critères multiples – les qualifications universitaires, les publications, l'expérience, la connaissance du contexte des pays en développement, et la bonne maîtrise de la langue anglaise – pour la composition de ces panels. Pour faire face au problème du décrochage, de nombreux participants ont été invités à participer afin de garantir que le nombre d'experts se situe dans la tranche des 10-18 personnes minimum. En outre, l'étude a été conçue à l'avance et menée de façon électronique de façon à ce que les cycles puissent être complétés rapidement et que l'intérêt des participants puisse être maintenu.

1.2.9 Test du modèle sur le terrain

Le test du modèle sur le terrain a impliqué une sélection adaptée de participants qualifiés, connaisseurs avec qui les entretiens ont été menés en utilisant le modèle de maturité. Un protocole d'entretien a été développé et respecté et les résultats des entretiens partagés avec les participants pour confirmer leur véracité. Afin de bénéficier d'un meilleur aperçu du contexte de chaque ville, le chercheur a lu les journaux en ligne réunis quotidiennement par le biais des bulletins d'information de Google.

La discussion sur les résultats de la recherche et les recommandations avec les parties prenantes, en petit comité, lors de l'exercice K-SWOT a constitué une dernière vérification du modèle et de sa pertinence.

Le recueil de données à la fois qualitatives et quantitatives dans le cadre du modèle de maturité ainsi que l'analyse ultérieure ont été employés pour soutenir la triangulation et obtenir une perspective plus riche sur la problématique.

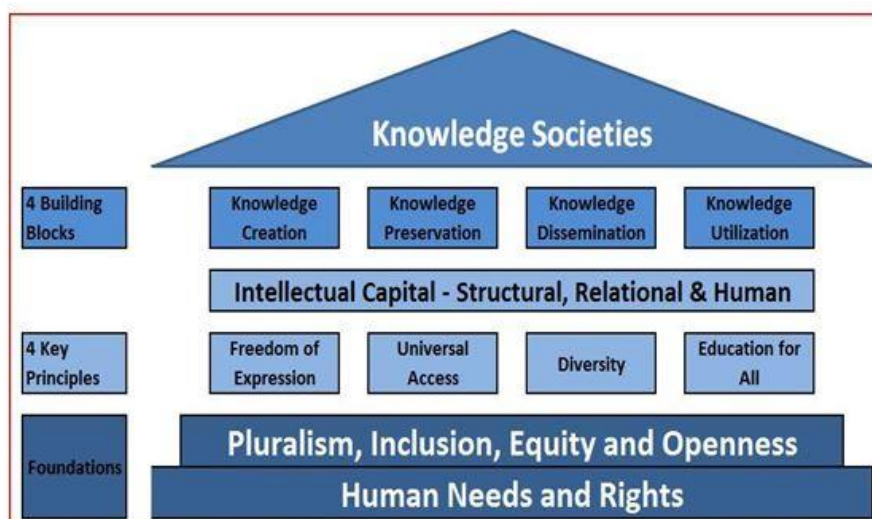
La Figure 4 présente la séquence de recherche utilisée pour mener cette étude.

1.3 CONSTRUCTION ET VALIDATION DU MODELE

En vue de mettre en pratique le cadre conceptuel de l'UNESCO, Hector et Ermine (2013) ont souligné ses liens avec la gestion de la connaissance et le capital intellectuel (voir Exposition 9). Dans le modèle Hector-Ermine, les principes, les fondements et les acteurs humains sont conçus comme constituant le capital intellectuel d'une société. Par conséquent, la capacité d'une société à identifier, à faire croître et à renouveler ce capital et à l'augmenter de façon efficace pour créer, préserver, disséminer et utiliser la connaissance dans le but de répondre à ses enjeux spécifiques déterminera l'efficacité de ses actions liées au développement fondé sur la connaissance et la réussite de sa vision sociétale.

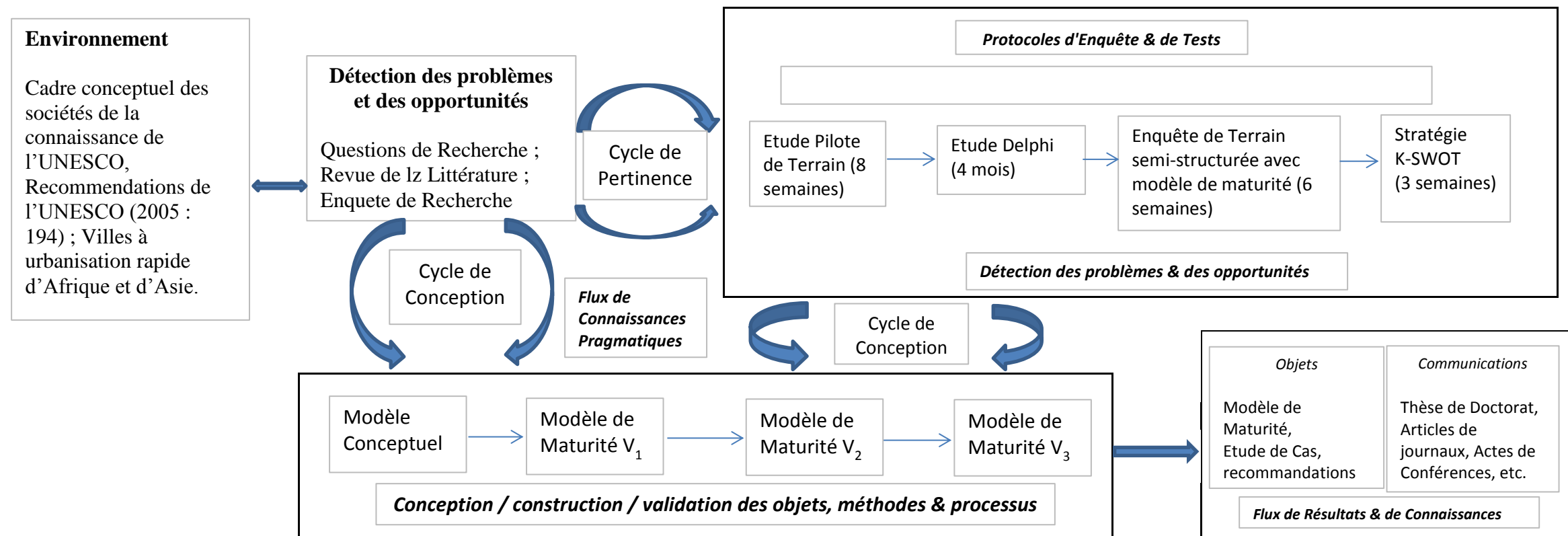
Knowledge Processes

Knowledge Capital



Exposition 9 : Cadre Conceptuel des Sociétés de la Connaissance de l'UNESCO Modifié Incorporant les Processus du Capital Intellectuel (Hector & Ermine, 2013)

En revisitant les définitions des Sociétés de la Connaissance de l'UNESCO, on observe que le concept relève essentiellement de l'utilisation dynamique de processus fondés sur la connaissance pour résoudre des problèmes sociaux, économiques et environnementaux au sein d'un système sociétal qui valorise et privilégie des principes éthiques spécifiques. Les types de processus de connaissance sociétale en mesure d'être sélectionnés, et le degré d'efficacité avec lequel ils peuvent être utilisés, dépend des capacités de la société ainsi que des « règles » qui régissent la façon qu'a la société de s'organiser.

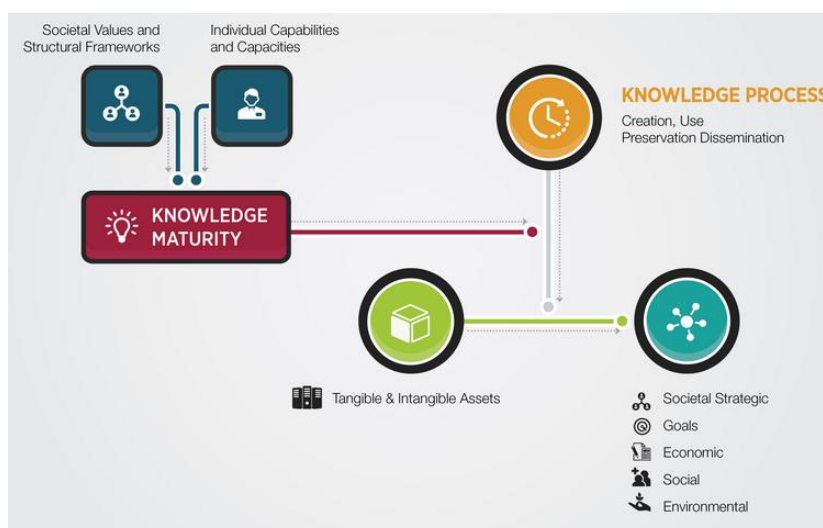


Exposition 10 : Séquence de recherche suivie dans l'étude, délais indicatifs et liens avec le cycle et les résultats du Modèle de la Recherche Scientifique (D'après Briggs & Schwabe, 2011 ; Hevner, 2004 ; Hevener & Chatterjee, 2007)

Les circonstances contextuelles telles que les ressources matérielles et les types, la qualité et la quantité des compétences du capital humain, entre autres, pourraient influencer les objectifs stratégiques que les différentes sociétés seraient en mesure de poursuivre et influencer les types de processus de connaissance sélectionnés tout comme le niveau d'efficacité de leur utilisation.

Le Model for Estimating the Intellectual Capital of Cities (MEICC)¹⁴ de Navarro et al.'s. (2012) intègre des indices d'efficacité qui évaluent les imperfections inhérentes en convertissant les ressources matérielles et immatérielles en objectifs finaux recherchés. Cependant, cette mesure de l'efficacité ne serait pas statique car elle serait en mesure d'être influencée par l'apprentissage, les changements sociétaux et une série d'autres facteurs tels que la motivation qui pourrait accentuer ou même entraver l'efficacité des processus de transformation au fil du temps. Le concept d'une mesure de la maturité pourrait aisément accueillir et expliquer ces variations.

Les modèles tels que ceux de Marti (2005), d'Yigitcanlar et de Lönnqvist (2013), du MaKCi (Garcia, 2008; Garcia & Leal, 2010) et de Käpylä et al.'s. (2012), soulignent le rôle des ressources matérielles en tant que composantes centrales du processus de développement fondé sur la connaissance. Ces liens ne sont pas formulés explicitement dans le Cadre Conceptuel des Sociétés de la Connaissance de l'UNESCO. En réalité, ce n'est que par l'application de la connaissance sous ses formes multiples – savoir comment, pourquoi, où, quand, quoi faire et le savoir-faire – aux ressources matérielles et immatérielles que les objectifs sociaux, économiques et environnementaux peuvent être atteints. Encore une fois, la base de ressources matérielles est aussi un élément important en termes de solutions disponibles pour une société.



Exposition 11 : Modèle de Développement Fondé sur la Connaissance pour les Sociétés de la Connaissance

¹⁴ Modèle pour l'Estimation du Capital Intellectuel des Villes

Pour résumer la réflexion conceptuelle présentée ci-dessus, l'hypothèse suivante est posée : Les sociétés de la connaissance cherchent à satisfaire les besoins collectifs et individuels de leurs membres au niveau social, économique et environnemental (objectifs stratégiques) en accord avec un ensemble de valeurs et de principes éthiques. Pour atteindre ces objectifs stratégiques et répondre aux enjeux clés, ils appliquent les processus de connaissance à leurs ressources matérielles et immatérielles. L'efficacité de toute société de la connaissance dans la sélection des processus de connaissance et dans leur application aux ressources matérielles et immatérielles pour atteindre ses objectifs stratégiques dépend de son niveau d'efficacité dans l'application de ces processus de la connaissance. Cette efficacité est le reflet du degré de maturité de cette société mesuré par rapport aux principes et fondements définis dans le Cadre Conceptuel des Sociétés de la Connaissance de l'UNESCO. Sur cette base, le modèle présenté sur la Figure 6 peut être établi :

1.3.1 Vue d'ensemble du Processus de Développement du Modèle de Maturité

Les lignes directrices du Modèle de la Recherche Scientifique de Hevner et al.'s, (2004) fournissent un cadre global au processus de construction du modèle à travers ses différentes phases, de la conception à la communication des résultats (voir Exposition 12). Mettler (2009) fournit des procédures spécifiques de construction du modèle qui complètent le cadre de Hevner et al. et garantissent la rigueur et la validité de ce processus (Voir Expositions 15 & 16).

Exposition 12 : Lignes directrices du Modèle de la Recherche Scientifique (Hevner et al., 2004)

Guideline	Description
Guideline 1: Design as an Artifact	Design-science research must produce a viable artifact in the form of a construct, a model, a method, or an instantiation.
Guideline 2: Problem Relevance	The objective of design-science research is to develop technology-based solutions to important and relevant business problems.
Guideline 3: Design Evaluation	The utility, quality, and efficacy of a design artifact must be rigorously demonstrated via well-executed evaluation methods.
Guideline 4: Research Contributions	Effective design-science research must provide clear and verifiable contributions in the areas of the design artifact, design foundations, and/or design methodologies.
Guideline 5: Research Rigor	Design-science research relies upon the application of rigorous methods in both the construction and evaluation of the design artifact.
Guideline 6: Design as a Search Process	The search for an effective artifact requires utilizing available means to reach desired ends while satisfying laws in the problem environment.
Guideline 7: Communication of Research	Design-science research must be presented effectively both to technology-oriented as well as management-oriented audiences.

Pour chaque notion du Cadre Conceptuel des Sociétés de la Connaissance de l'UNESCO, ses composants principaux sont identifiés, les indicateurs/critères pour chacun des composants mentionnés dans la littérature sont utilisés pour établir ce modèle (Voir Exposition 13 & 14).

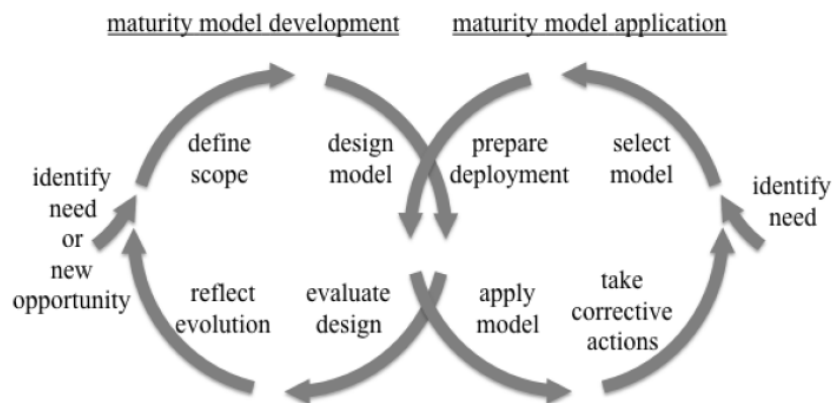
Le modèle de développement fondé sur la Connaissance et ses critères/indicateurs sont validés par le biais d'examens initiaux d'experts et d'un panel Delphi. Le test pilote du modèle de maturité sur le terrain, élaboré à partir du modèle de développement fondé sur la Connaissance, est mené à Addis-Abeba et à Bangkok.

Exposition 13 : Notions « fondamentales » du modèle de maturité de la ville de la connaissance et leur contribution aux actifs immatériels de la connaissance

Dimension	Affirmations prenant appui sur le corpus bibliographique	Références bibliographiques
Besoins et droits de l'homme	Le respect des droits de l'homme établit des normes sociétales qui assurent la cohésion sociale, fournissent des cadres éthiques et des cadres fondés sur des valeurs qui guident les processus gouvernementaux et qui influent sur les choix de société et l'orientation stratégique en conformité avec la loi internationale en renforçant dès lors la prévisibilité. A cet égard, la responsabilisation, la sensibilisation, la non-discrimination, la participation et les mesures structurelles jouent un rôle de soutien primordial. Favorise la création et le développement d'un capital social, humain et structurel.	De Beco (2008) ; Naval et al., (2008) ; United Nations Human Rights Committee (2011, 2013); UNESCO 2005; United Nations Office of the High Commissioner for Human Rights (2012).
Pluralisme	Faire en sorte que la diversité sociale devienne un bien social par le biais d'interventions actives au sein des systèmes politiques, sociaux, économiques et éducationnels garantit les droits des citoyens et une place pour tous et crée une cohésion sociale. Dans les sociétés actuelles globalisées et hétérogènes, le pluralisme joue un rôle fondamental pour une croissance et un développement durables et pour la création d'un capital social.	Arizpe et al. (2000) ; Eck (2006) ; Organization for Economic Cooperation and Development (2014) ; Ritzen et al. (2000) ; UNESCO (2005); Zapata-Barrero & Triandafyllidou (2012).
Inclusion	Laisser des pans de sa population vivre dans la pauvreté, en demeurant déresponsabilisés et à l'écart de la vie civique/sociale empêche une société de tirer parti et de bénéficier de toute l'ampleur de son capital humain. Ceci représente un coût d'opportunité élevé et peut aussi entraîner une instabilité et des troubles sociaux. Favorise le développement du capital humain, social et structurel.	Atkinson et al. (2011) ; Bhalla and Lapeyre (1997) ; EuroStat (2014) ; Gandelman, (2011) ; International Labor Organization (2012) ; Justino and Litchfield (2005) ; Klugman (2005) ; Robinson (2008) ; Sen (1999) ; UNESCO (2005); US Census Bureau (2014) ; World Bank (2013).
Équité	La possibilité pour tous les membres d'une société d'accéder aux débouchés économiques, d'être traités de façon équitable en ce qui concerne le rapport entre les coûts sociétaux et les rétributions sociales qui sont les leurs et d'être en mesure d'avoir régulièrement accès à des services sociaux de qualité – p. ex. santé et éducation – sont de bons prédicteurs de performance par le biais d'une série de mesures d'ordre économique et non-économique. Favorise le capital social, humain et structurel.	Beder (2000) ; Clark (2012) ; Dulal et al. (2009) ; Falk et al. (1993) ; OECD (2012) ; Stiglitz (2012); UNESCO (2005).
Ouverture	L'ouverture contribue à une meilleure prise de décision, à l'émergence de créativité et d'innovation en élargissant la part de participation des citoyens à la prise de décision, en permettant une meilleure mise en commun des idées et soutient la création et l'accès aux biens fondés sur la connaissance, aux services et aux infrastructures à un coût moyen inférieur. Favorise le capital social, humain et structurel.	Bissell (2009) ; Bissell & Boyle (2013) ; Bugaric (2004) ; De Dreu et al. (2006) ; Downes (2007) ; European Commission (2001) ; Gisselquist (2012) ; Goncalo et al. (2009) ; Judge et al. (2013) ; Keith (2012) ; Matthews et al. (2004) ; McCrae et al. (1992) ; Saroglou (2002) ; Sibley and Duckitt (2008) ; UNESCO (2005).

Exposition 14 : « Principes clés » des notions au sein du modèle de maturité de la ville de la connaissance et leur contribution aux actifs immatériels de la connaissance

Dimension	Affirmations prenant appui sur le corpus bibliographique	Références bibliographiques
Liberté d'expression	Un climat propice à la diffusion publique de points de vue divers, à leur interrogation, comparaison, validation, absorption et réagencement pour créer de nouvelles idées et de nouvelles connaissances est fondamental pour le développement des sociétés de la connaissance et de leurs économies. Favorise le capital social et relationnel.	Banerjee and Seneviratne (2005) ; Peters (2010) ; Starr (2009) ; Trappel and Maniglo (2009) ; OHCHR (2012) ; UNESCO (2005, 2010) ; UNESCO and WRTC (2001) ; Valcke (2009).
Accès universel à l'information et à la connaissance	Promouvoir un accès universel à l'information et à la connaissance garantit un avantage compétitif, renforce l'efficacité, l'efficacité, la participation et le bien-être socio-économique. Un réseau de transport efficace pour la circulation des personnes, des marchandises et des services ; un accès à des communications numériques locales et globales de même que les compétences requises pour en jouir sont des points cruciaux. Favorise le capital social, humain et structurel.	Abdelghaffar & Elmessiry (2012) ; Ayanso et al. (2011) ; Azmi and Karim (2012); Bhatia (2001) ; Biao et al. (2013) ; Borja & Castells (1997) ; Campbell (2001) ; Castells (1989) ; Delbosc and Currie (2011) ; Frank (2006) ; Gray et al. (2006) ; Jenkins (2013) ; Hine and Mitchell (2003) ; Lamont et al. (2013) ; Lu (2001) ; Lucas (2004) ; Mees (2010) ; Schlichter & Danylchenko (2014) ; Sietchiping et al. (2012) ; UNESCO (2005) ; United Nations Program for Human Settlements (2009).
Diversité culturelle et linguistique	Soutenir la diversité culturelle et linguistique constitue un moyen de réaffirmer l'identité culturelle et la valeur personnelle de tous les citoyens. Cela permet la transmission de connaissances locales indispensables à la survie – qui peuvent s'avérer encore inconnues de la communauté scientifique. La diversité linguistique peut soutenir l'enrichissement mutuel des idées en faisant émerger de la créativité et de l'innovation. Les expressions culturelles peuvent renforcer la progression du bien-être socio-économique de la ville et sa vitalité. Favorise le capital social et humain.	Burri (2013) ; Clements (2006) ; Hill (2004) ; Johnstone (2002) ; Lønsmann (2014) ; Looseley (2004) ; Marschan-Piekkari et al. (2009) ; Moreau & Peltier (2004) ; Pyykkönen (2012) ; Skutnab-Kangas (2002) ; Stirling (1998) ; Stock (2011) ; UNESCO (2003; 2005) ; Vromen (1992).
Education pour tous	Le capital humain est la clé du succès – économique, social, et environnemental – dans les sociétés de la connaissance. Les villes qui sont le plus capables de développer, d'attirer, de retenir le capital humain et de l'équiper des compétences et des attitudes nécessaires à une participation effective dans le cadre d'une citoyenneté mondiale s'exprimant au sein d'un espace-monde glocalisé sont davantage susceptibles de parvenir à mieux résoudre leurs problèmes, à fixer et à atteindre les objectifs de développement. Favorise le capital social, humain et structurel.	Arizpe et al. (2000) ; Blaug (1976) ; Bennet & Bennet (2007) ; Bok (229) ; Bounfour & Edvinsson (2005) ; Činčikaitė & Paliulis (2013) ; Dickmann (2012) ; Dijk (2006) ; Edvinsson & Malone (1997) ; Florida (2002) ; Gamerschlag (2013); Gillies (2011) ; Keeley (2007) ; lisi & Biondo (2013) ; Malik et al. (2014) ; Ng et al. (2007) ; OECD (2005) ; Parkinson (2004) ; Scott (2008) ; Singhal et al. (2013) ; Sousa & Bradley (2006) ; Stiglitz (2012) ; Tharenou (2003) ; Tyson (2011) ; UNESCO (2005) ; World Bank (199) ; Yigitcanlar et al. (2007) ; Yigitcanlar & Lönnqvist (2013) ; Yitmen (2013).

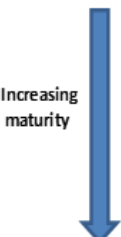


Exposition 15 : Interaction entre le développement du modèle et l'application- Mettler, T. (2009).

Exposition 16 : Paramètres décisionnels pour le développement du modèle de maturité (Mettler, 2009)

Phase	Decision parameter	Characteristic			
Define scope	Focus / breadth	General issue		Specific issue	
	Level of analysis/ depth	Group decision-making	Organisational considerations	Inter-org. considerations	Global & societal considerations
	Novelty	Emerging	Pacing	Disruptive	Mature
	Audience	Management-oriented	Technology-oriented	Both	
	Dissemination	Open		Exclusive	
Design model	Maturity definition	Process-focussed	Object-focussed	People-focussed	Combination
	Goal function	One-dimensional		Multi-dimensional	
	Design process	Theory-driven		Practitioner-based	Combination
	Design product	Textual description of form		Textual description of form and functioning	Instantiation (assessment tool)
	Application method	Self-assessment		Third-party assisted	Certified professionals
	Respondents	Management	Staff	Business partners	Combination
Evaluate design	Subject of evaluation	Design process		Design product	Both
	Time-frame	Ex-ante		Ex-post	Both
	Evaluation method	Naturalistic		Artificial	
Reflect evolution	Subject of change	None	Form	Functioning	Form and functioning
	Frequency	Non-recurring		Continuous	
	Structure of change	External / open		Internal /exclusive	

D'après la littérature scientifique (Voir Expositions 13 & 14) une variété d'indicateurs/ critères pour les composants des notions relevées dans le modèle sont développés. Les modèles de maturité élaborés à partir de ce processus sont présentés sur Expositions 18, 19 & 26.



Maturity Levels		Features
1	Initial	Characterized by adhoc responses; limited human and institutional capabilities to plan, develop and implement policies; top-down decision-making.
2	Defined	Need for policies, processes and human-capacity recognized and are but resource constraints lack of human and institutional capacity challenges and systems. Still dependent on external resources.
3	Managed	Enabling environment supported by adequate processes, policies, human and institutional capacity as well as resurces. Seeking to find and adapt best practices. Capabilities for medium term planning
4	Integrated	Recognized as best in class in one or more areas by other cities. Policies, process supported by institutional capacities, capable of long range planning and setting stretch goals.

Exposition 17 : Niveaux de maturité et leurs définitions adoptées dans le modèle

Valeurs Sociétales & Cadres Structurels	Besoins & Droits de l'Homme	Sensibilisation				
		Responsabilité				
		Non-discrimination				
		Participation				
		Mesures Structurelles				
	Pluralisme	Attitudes à l'égard du handicap de l'appartenance ethnique/de l'égalité des genres/de la race ;				
		Attitudes à l'égard des immigrants/migrants ;				
		Attitudes à l'égard de la religion/des valeurs politiques/du statut économique/ des préférences ou orientations sexuelles				
		Attitudes à l'égard de la création de coalitions multipartites				
	Inclusion	Accès à des opportunités d'emplois sûres et décentes				
		Degré de soutien à la participation des groupes vulnérables (femmes, jeunes, personnes handicapées, âgées et à la retraite) aux activités économiques				
		Accès aux services sociaux de base (soins de santé, logement, enseignement primaire et secondaire etc.)				
		Accès à l'espace civique et politique				
		Accès au crédit/à la formation (Degré de soutien à l'activité entrepreneuriale)				
	Equité	Accès aux services sociaux de base y compris les services de santé sexuelle et génésique				
		Equité dans la distribution des coûts sociaux et des bénéfices				
		Parité hommes-femmes dans les politiques publiques				
		Communication adéquate et accès équitable aux biens et services sociaux				
		Accès à la propriété foncière (terres et logement) et sécurité d'occupation				
	Ouverture	Volonté d'explorer les approches non conventionnelles pour répondre aux enjeux sociétaux				
		Promotion de normes ouvertes				
		Transparence dans les processus de politiques publiques/de prises de décision				
		Participation aux processus de politiques publiques/ de prises de décision				
		Protection de la vie privée et des données personnelles				
		Promotion d'un juste équilibre entre les intérêts publics et privés dans le cadre du DPI et développement du domaine public.				
		Niveau de Maturité	Initial	Défini	Géré	Intégré
	1		2	3	4	

Exposition 18 : Modèle de Maturité - Valeurs Sociétales et Cadres

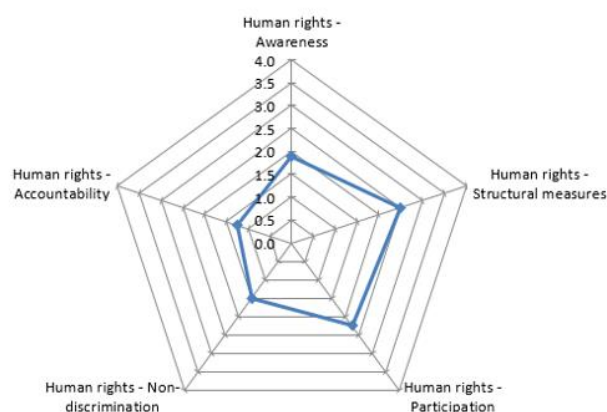
Capacités Individuelles & Capacités (Principes Clés)				
	Liberté d'Expression	Climat sociétal favorisant des discussions et des échanges libres		
		Diversité, stabilité et indépendance des médias		
		Normes déontologiques des professionnels des médias		
		Indépendance, efficacité et transparence des services publics de radiodiffusion		
		Cadres réglementaires des médias (on/off-line)		
	Accès Universel à l'Information & à la Connaissance	Caractère abordable, accessible et sécurisé des services Internet		
		Efforts visant à renforcer les capacités humaines en matière d'utilisation des TIC		
		Accès à une alimentation électrique fiable et abordable		
		Disponibilité de l'accès en ligne aux services du gouvernement		
		Adéquation et accessibilité du réseau de transports en commun		
		Présence de pôles locaux et régionaux de connaissance (y compris communautés de pratique, librairies, archives et universités)		
		Soutien à la connaissance traditionnelle/locale (préservation, valorisation et mobilisation)		
	Diversité Culturelle & Linguistique	Degré d'efforts déployés pour la préservation de l'héritage culturel		
		Degré de renforcement des capacités dans le domaine de l'expression culturelle		
		Encouragement et promotion du multilinguisme		
		Reconnaissance et promotion des industries culturelles		
		Présence de la culture et des langues locales dans les médias numériques		
	Education pour Tous	Capacité de la ville à entretenir son talent humain (par le biais de l'enseignement scolaire formel, des structures informelles et des espaces civiques)		
		Capacité à attirer et à retenir le talent		
		Soutien à l'éducation à la citoyenneté mondiale (compétence interculturelle)		
Efforts pour renforcer l'éducation aux médias et la maîtrise de l'information par les citoyens (culture numérique)				
Soutien au transfert intergénérationnel des connaissances traditionnelles et locales.				
Niveaux de Maturité	Initial	Défini	Géré	Intégré
	1	2	3	4

Exposition 19 : Structure du modèle de maturité et composants des notions au sein des compétences et capacités individuelles (Principes)

1.4 RESULTATS & DISCUSSIONS

1.4.1 Modèle de maturité

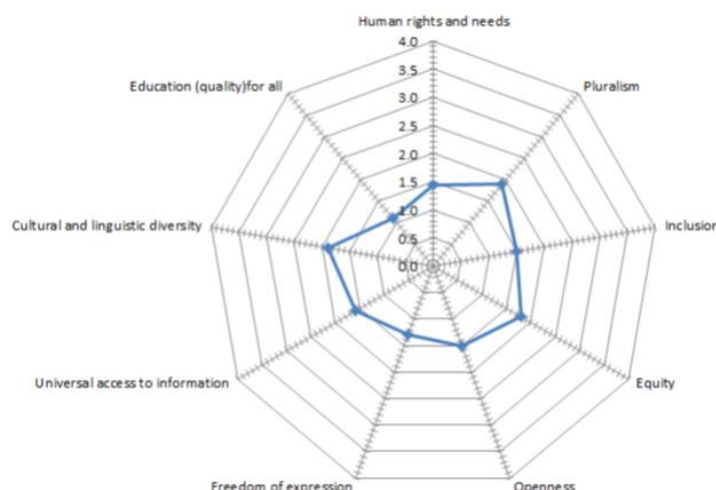
Des entretiens semi-structurés basés sur les modèles de maturité sont effectués à Addis-Abeba avec des participants délibérément choisis parmi cinq groupes de parties prenantes : le gouvernement, le secteur privé, les agences de développement international, la société civile et universitaire. 12 entretiens au total ont été menés avec des représentants issus de quatre groupes de parties prenantes. Aucun entretien n'a été mené avec les représentants gouvernementaux. Les Expositions 20 & 21 présentent quelques-uns des résultats de cette évaluation. En se basant sur le cadre évaluatif, de faibles valeurs de maturité ont été obtenues pour l'ensemble des notions (Voir Exposition 21). Etant donné que le pays appartient au groupe des pays les moins avancés ces mesures ne se sont pas avérées surprenantes.



Exposition 20 : Performance d'Addis-Abeba sur les composants de la Notion de Droits de l'Homme

En ce qui concerne la notion des Droits de l'Homme, la ville a eu de bonnes performances sur les éléments relatifs aux mesures structurelles, à la participation et à la sensibilisation par rapport à la non-discrimination et à la responsabilité. Les discussions avec les participants ont suggéré que le niveau plus élevé de performance sur trois des composants pourrait être lié aux efforts spécifiques de la ville dans la réponse aux exigences des donateurs pour la prestation d'une assistance officielle de développement (AOD). Comme il était aisément réalisable pour la ville de répondre aux exigences du donateur sans affecter le statut quo et en effectuant les réformes requises par le donateur, la ville et l'état pouvaient être parfaitement en accord avec les exigences de financement sans aucunement élargir l'espace pour la discussion politique et publique. Ce résultat révèle l'importance des approches usant de méthodes mixtes pour octroyer une compréhension approfondie. Il démontre aussi la nécessité de mener des examens pilotes et d'étalonner les indicateurs / critères avant toute étude plus large puisque leur signification et leur importance peuvent varier d'un endroit à l'autre. Ceci indique aussi

la difficulté de choisir des indicateurs/critères « universellement pertinents » dans la construction du modèle et la gestion des processus puisque leur fiabilité et validité peut varier d'un endroit à l'autre et au fil du temps. Ceci remet aussi en question l'usage répandu des données secondaires pour l'étalonnage. Finalement, ceci suggère que si les villes ont véritablement l'intention de tirer parti de leurs avantages uniques et de remédier à leurs faiblesses, il serait plus profitable qu'elles développent leurs propres indicateurs/critères spécifiques et mènent des comparaisons longitudinales sur la durée plutôt que de se focaliser uniquement sur les classements.



Exposition 21 : Maturité de la Connaissance d'Addis-Abeba évaluée sur la base du Modèle de Maturité de la Ville de la Connaissance

1.4.2 Etude Delphi

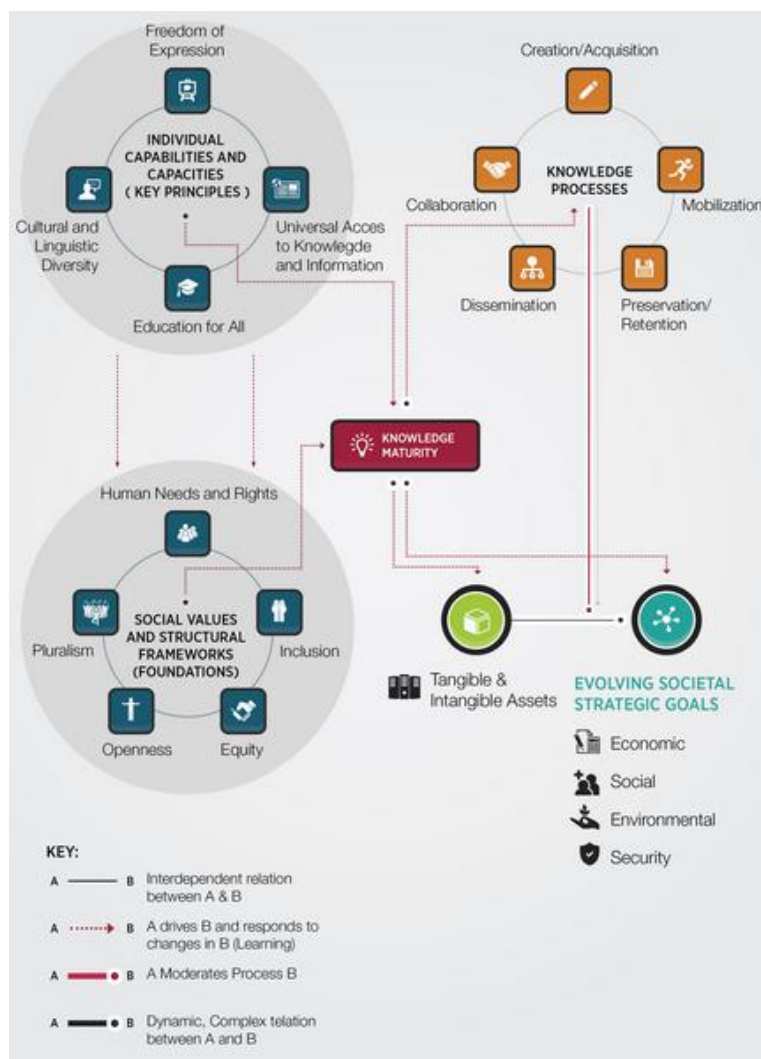
Un panel Delphi composé de spécialistes internationaux des domaines de la gestion de la connaissance, des villes de la connaissance, du capital intellectuel et du développement fondé sur la connaissance a été invité à valider le modèle de développement fondé sur la connaissance. Différents critères, entre autres les publications universitaires, l'expérience des villes en développement, le genre, les années d'expérience professionnelle, ont été utilisés pour présélectionner les spécialistes s'étant montrés intéressés pour participer à l'étude. Une sélection de 66 experts a été établie. L'Exposition 22 présente les critères de conception relatifs à la préparation de l'étude Delphi, alors que l'Exposition 25 indique comment le consensus a évolué au cours du processus. L'Exposition 24 présente le modèle final de développement fondé sur la connaissance obtenu tandis que l'Exposition 26 présente l'ensemble complet des composantes du modèle, critères / indicateurs et facteurs de pondération. Sur la base de ces critères/indicateurs à nouveau révisés, le modèle de maturité a été actualisé.

Exposition 22 : Etude Delphi, sa conception et sa mise en œuvre effective (Adapté de Day & Bobeva, 2004)

CRITERES DE CONCEPTION	OPTIONS			
Objectif	Théorie/ construction du modèle	Exploration	Vérification des hypothèses	Evaluation des options
Participants	Homogènes		Hétérogènes	
Anonymat	Total	Partiel		Non Anonyme
Nombre maximum de phases	2	3	4	>4
Participants par phases	10-18 participants par phase; minimum acceptable 7 participants Phase 1 – 42, Phase 2 – 42, Phase 3 - 33			
Concomitance des phases	Séquentielles		Simultanées	
Mode opérateur	Face à face	Hybride		A distance
Moyen de communication	Courrier postal	Téléphone Face à face Skype	Fax	E-mail / Internet
Autres critères pré-déterminés	Concensus > 75% ; Toutes les questions résolues ; moins de 7 participants dans la phase finale ; APMO ; Stabilité entre les phases <15% ; et mesures statistiques non-paramétriques IQR<=1			
Clé				
<ul style="list-style-type: none">Mise en œuvre prévue (Si aucun changement dans son déroulement)Eléments supplémentaires intégrésAlternative appliquée				

Exposition 23 : Comparaison de la composition des panels Delphi, effective et anticipée, par le biais des principaux critères de sélection

Principaux critères de sélection	Effective	Anticipée
Nombre d'experts pré-qualifiés	66	80 - 145
% d'Experts avec un Doctorat	41%	45%
% d'Experts avec un Master	93%	100%
% de Femmes	33%	40%
% > 10 ans d'expérience professionnelle	87%	75%
% qui ont écrit ou qui ont examiné au moins un article publié et soumis à une évaluation par les pairs, rapport technique, livre, acte de conférence	97%	100%
% de participants avec une expérience professionnelle des pays en développement	68%	40%
% de participants vivant dans les pays en développement	46%	40%
Représentation sectorielle		
• Secteur privé	30%	20%
• Gouvernement	11%	20%
• Universitaires	57%	20%
• Société Civile	19%	20%
• Organisations Internationales y compris les Nations Unies	22%	20%
% avec de l'expérience dans 2 secteurs ou plus	22%	10%
Panel pré-qualifié participant à Delphi (Nombre / %)		
• Phase 1	42 / 63%	32 – 58 / 40%
• Phase 2	40 / 61%	24 – 43 / 23%
• Phase 3	35 / 53%	18 – 32 / 17%
• Phase 4	Consensus	13 – 24 / 13%



Exposition 24 : Modèle final de Développement Fondé sur la Connaissance de l'étude Delphi

Exposition 25 : Evolution du consensus et du nombre d'indicateurs de la notion de 1a Phase 1 à la Phase 3

	Round 1	APMO = 76.7%	Round 2	APMO = 87.9%	Round 3	APMO = 88.3%
Question	% Agreeing	Consensus (Yes /No)	% Agreeing	Consensus (Yes /No)	% Agreeing	Consensus (Yes /No)
<i>Does the knowledge-based development model capture the concepts presented in the UNESCO's Knowledge Societies Conceptual Framework?</i>	57.6	No	92.1	Yes	--	--
<i>From a big-picture or macro-level policy perspective does the Proposed Knowledge-based Development Model's represent the role of knowledge in driving or supporting development?</i>	57.6	No	84.2	No	75.0	YES ²
<i>Are the five indicators/criteria adequate for assessing the Human Rights and Needs climate/environment of a city?</i>	87.9	Yes	--	--	--	--
<i>Are the four indicators/criteria adequate for assessing the Pluralism climate/environment of a city?</i>	65.5	No	92.1	Yes	--	--
<i>Are the five proposed indicators/criteria adequate for assessing the level of Inclusion in the city?</i>	75.0	No	94.7	Yes	--	--
<i>Are the five proposed indicators/criteria adequate for assessing the level of Equity in the city?</i>	75.0	No	--	--	90.6	YES
<i>Are the five proposed indicators/criteria adequate for assessing the level of Openness in the city?</i>	81.3	Yes	89.2	Yes ²	--	--
<i>Are the five proposed indicators/criteria adequate for assessing Freedom of Expression in the city?</i>	87.5	Yes	86.5	Yes ²	--	--
<i>Are the seven proposed indicators/criteria adequate for assessing Universal Access to Information in the city?</i>	56.3	No	--	--	87.5	YES ²
<i>Are the five proposed indicators/criteria adequate for assessing the Cultural & Linguistic Diversity of the city?</i>	71.9	No	83.8	Yes ²		
<i>Are the five proposed indicators/criteria adequate for assessing the Education for All construct within the city?</i>	75.0	No	86.5	No	90.6	YES

Exposition 26: Aperçu des notions du modèle et de leurs critères/indicateurs constitutifs

			Rang	Facteur de pondération		
MATURITE DE LA CONNAISSANCE	Valeurs Sociétales & Cadres Structurels	Besoins & Droits de l'Homme	HR1	1	0,27	Sensibilisation
			HR2	3	0,20	Responsabilité
			HR3	4	0,18	Non-discrimination
			HR4	2	0,20	Participation
			HR5	5	0,15	Mesures Structurelles
		Pluralisme	PL1	1	0,29	Attitudes à l'égard du handicap de l'appartenance ethnique/de l'égalité des genres/de la race ;
			PL2	3	0,19	Attitudes à l'égard des immigrants/migrants ;
			PL3	1	0,29	Attitudes à l'égard de la religion/des valeurs politiques/du statut économique/des préférences ou orientations sexuelles
			PL4	2	0,24	Attitudes à l'égard de la création de coalitions multipartites
		Inclusion	IN1	2	0,25	Accès à des opportunités d'emplois sûres et décentes
			IN2	3	0,19	Degré de soutien à la participation des groupes vulnérables (femmes, jeunes, personnes handicapées, âgées et à la retraite) aux activités économiques
			IN3	1	0,27	Accès aux services sociaux de base (soins de santé, logement, enseignement primaire et secondaire etc.)
			IN4	4	0,17	Accès à l'espace civique et politique
			IN5	5	0,12	Accès au crédit/à la formation (Degré de soutien à l'activité entrepreneuriale)
		Equité	EQ1	1	0,26	Accès aux services sociaux de base y compris les services de santé sexuelle et génésique
			EQ2	3	0,20	Equité dans la distribution des coûts sociaux et des bénéfices
			EQ3	4	0,17	Parité hommes-femmes dans les politiques publiques
			EQ4	5	0,15	Communication adéquate et accès équitable aux biens et services sociaux
			EQ5	2	0,22	Accès à la propriété foncière (terres et logement) et sécurité d'occupation
		Ouverture	OP1	3	0,18	Volonté d'explorer les approches non conventionnelles pour répondre aux enjeux sociétaux
			OP2	4	0,15	Promotion de normes ouvertes
			OP3	1	0,23	Transparence dans les processus de politiques publiques/de prises de décision
			OP4	2	0,19	Participation aux processus de politiques publiques/de prises de décision
			OP5	5	0,13	Protection de la vie privée et des données personnelles
			OP6	6	0,11	Promotion d'un juste équilibre entre les intérêts publics et privés dans le cadre du DPI et développement du domaine public.
	Capacités Individuelles & Capacités (Principes Clés)	Liberté d'Expression	FE1	1	0,28	Climat sociétal favorisant des discussions et des échanges libres
			FE2	2	0,22	Diversité, stabilité et indépendance des médias
			FE3	4	0,16	Normes déontologiques des professionnels des médias
			FE4	3	0,18	Indépendance, efficacité et transparence des services publics de radiodiffusion
			FE5	5	0,14	Cadres réglementaires des médias (on/off-line)
		Accès Universel à l'Information & à la Connaissance	UA1	1	0,18	Caractère abordable, accessible et sécurisé des services Internet
			UA2	2	0,17	Efforts visant à renforcer les capacités humaines en matière d'utilisation des TIC
			UA3	3	0,16	Accès à une alimentation électrique fiable et abordable
			UA4	4	0,15	Disponibilité de l'accès en ligne aux services du gouvernement
			UA5	5	0,14	Adéquation et accessibilité du réseau de transports en commun
			UA6	6	0,10	Présence de pôles locaux et régionaux de connaissance (y compris communautés de pratique, bibliothèques, archives et universités)
			UA7	7	0,09	Soutien à la connaissance traditionnelle/locale (préservation, valorisation et mobilisation)
		Diversité Culturelle & Linguistique	CL1	2	0,21	Degré d'efforts déployés pour la préservation de l'héritage culturel
			CL2	1	0,22	Degré de renforcement des capacités dans le domaine de l'expression culturelle
			CL3	3	0,21	Encouragement et promotion du multilinguisme
			CL4	5	0,18	Reconnaissance et promotion des industries culturelles
			CL5	4	0,19	Présence de la culture et des langues locales dans les médias numériques
		Education pour Tous	ED1	1	0,28	Capacité de la ville à entretenir son talent humain (par le biais de l'enseignement scolaire formel, des structures informelles et des espaces civiques)
			ED2	2	0,22	Capacité à attirer et à retenir le talent
			ED3	4	0,17	Soutien à l'éducation à la citoyenneté mondiale (compétence interculturelle)
			ED4	3	0,18	Efforts pour renforcer l'éducation aux médias et la maîtrise de l'information par les citoyens (culture numérique)
			ED5	5	0,14	Soutien au transfert intergénérationnel des connaissances traditionnelles et locales.

Exposition 27 : Propositions élaborées à partir du Modèle de Développement fondé sur la Connaissance

Propositions basées sur le Modèle de Développement fondé sur la Connaissance
Proposition 1 : La réponse d'une ville aux objectifs et enjeux évolutifs, sociétaux et stratégiques qu'elle rencontre est déterminée par les ressources matérielles et immatérielles disponibles et par la maturité de la connaissance qu'elle est en mesure d'appliquer à ces ressources.
Proposition 2 : L'ensemble de processus de connaissances qu'une ville peut mobiliser détermine l'efficacité de ses ressources matérielles et immatérielles en ce qui concerne les réponses qu'elle apporte aux objectifs et enjeux évolutifs, sociétaux et stratégiques.
Proposition 3 : La maturité de la connaissance d'une ville influe sur sa façon de conceptualiser ses objectifs et enjeux sociétaux stratégiques et est en mesure d'élaborer des réponses.
Proposition 4 : La maturité de la connaissance d'une ville influe sur la composition de l'ensemble des processus de connaissances dont elle peut bénéficier.
Proposition 5 : La maturité de la connaissance d'une société influe sur sa capacité à identifier et à tirer le meilleur parti de ses actifs matériels et immatériels.
Proposition 6 : La maturité de la connaissance d'une ville est déterminée par sa capacité à consolider et à stimuler les capacités individuelles et les capacités de ses citoyens.
Proposition 7 : La maturité de la connaissance d'une ville est influencée par son système de valeurs sociales et de cadres structurels.
Proposition 8 : Des interdépendances existent entre les compétences et les capacités individuelles et les valeurs sociales et les cadres structurels au sein d'une ville.

Analyse SWOT de la Connaissance et Dialogue Politique

Il a été nécessaire de travailler à distance avec un groupe de 28 spécialistes techniques et politiques pour utiliser les méthodes employées dans cette étude afin d'analyser et de développer des réponses aux enjeux auxquels font face les villes-capitales dans les pays en développement en Afrique et en Asie. Les spécialistes sont issus du gouvernement, du secteur privé, universitaire, de la société civile, d'agences de développement intergouvernementales et ont vécu et travaillé dans ces environnements. Grâce à l'utilisation de la méthodologie, une série de réponses politiques et opérationnelles aux enjeux et objectifs identifiés par les participants ont été développées. Les participants ont approuvé les résultats mais ont aussi recommandé que de plus amples tests sur le terrain soient entrepris. Les commentaires des participants au sujet de l'application du modèle et de la pertinence des éclairages qu'il fournit pour des mesures de suivi incluent :

- *Un excellent effort pour codifier le modèle de développement des villes de la connaissance. Comme il n'existe aucun modèle parfait, les tentatives pour créer de bons modèles doivent être enrichies grâce à des tests de terrain performants.*

- *Ceci a constitué un exercice difficile et spécialement pour moi à Nairobi en sachant qu'il existe de véritables réponses à ces problèmes issues du monde universitaire, de la recherche et de l'industrie et qui demeurent cependant non-appliquées pour la plupart.*
- *Je pense que notre modèle est valide et utile, théoriquement parlant. De mon point de vue individuel, une meilleure conception graphique pourrait aider à le rendre plus attrayant et facile à comprendre pour les preneurs de décision et les spécialistes.*

1.5 CONTRIBUTIONS DE L'ETUDE

1.5.1 Réponses aux Questions de recherche

QR1 : Comment le concept de Sociétés de la Connaissance de l'UNESCO peut-il être mis en œuvre pour répondre aux enjeux stratégiques (objectifs de développement post-2015 des Nations Unies) auxquels doivent faire face les villes des pays en développement ? L'étude a donné lieu à un modèle de développement fondé sur la connaissance basé sur le Cadre Conceptuel des Sociétés de la Connaissance de l'UNESCO, à un modèle de maturité destiné à l'évaluation et à une méthodologie pour l'identification et le développement de réponses aux enjeux stratégiques des villes. Un certain nombre d'outils électroniques ont été développés.

QR2 : Quels éclairages sont apportés par les Modèles relatifs au Développement fondé sur la Connaissance? Le modèle articule un ensemble d'hypothèses – validées par des analyses d'experts et une étude Delphi formelle – mettant en jeu des facteurs relevant des droits de l'homme et les résultats sociétaux au niveau global. Les relations proposées, les processus de connaissance ainsi que les facteurs de pondération dérivés, peuvent servir à éclairer la prise de décision et à développer toute une série de réponses que les décideurs politiques et les dirigeants des villes pourraient être en mesure d'adopter dans la mise en place d'objectifs collectifs et dans le recueil de réponses collectives aux enjeux développementaux.

QR3 : Quel est le degré de pertinence des Modèles relatifs au Développement fondé sur la Connaissance dans le contexte au sein duquel les décideurs politiques et les experts des villes sélectionnées opèrent et dans quelle mesure peuvent-ils être utiles à l'élaboration et au développement de plans d'action ? La capacité des différents acteurs politiques dans les tests de terrain d'Addis-Abeba et de Bangkok ainsi que celle des participants aux Dialogues-politiques à utiliser les outils pour analyser leurs situations actuelles et pour développer et formuler des réponses indique la pertinence et l'utilité des éléments développés.

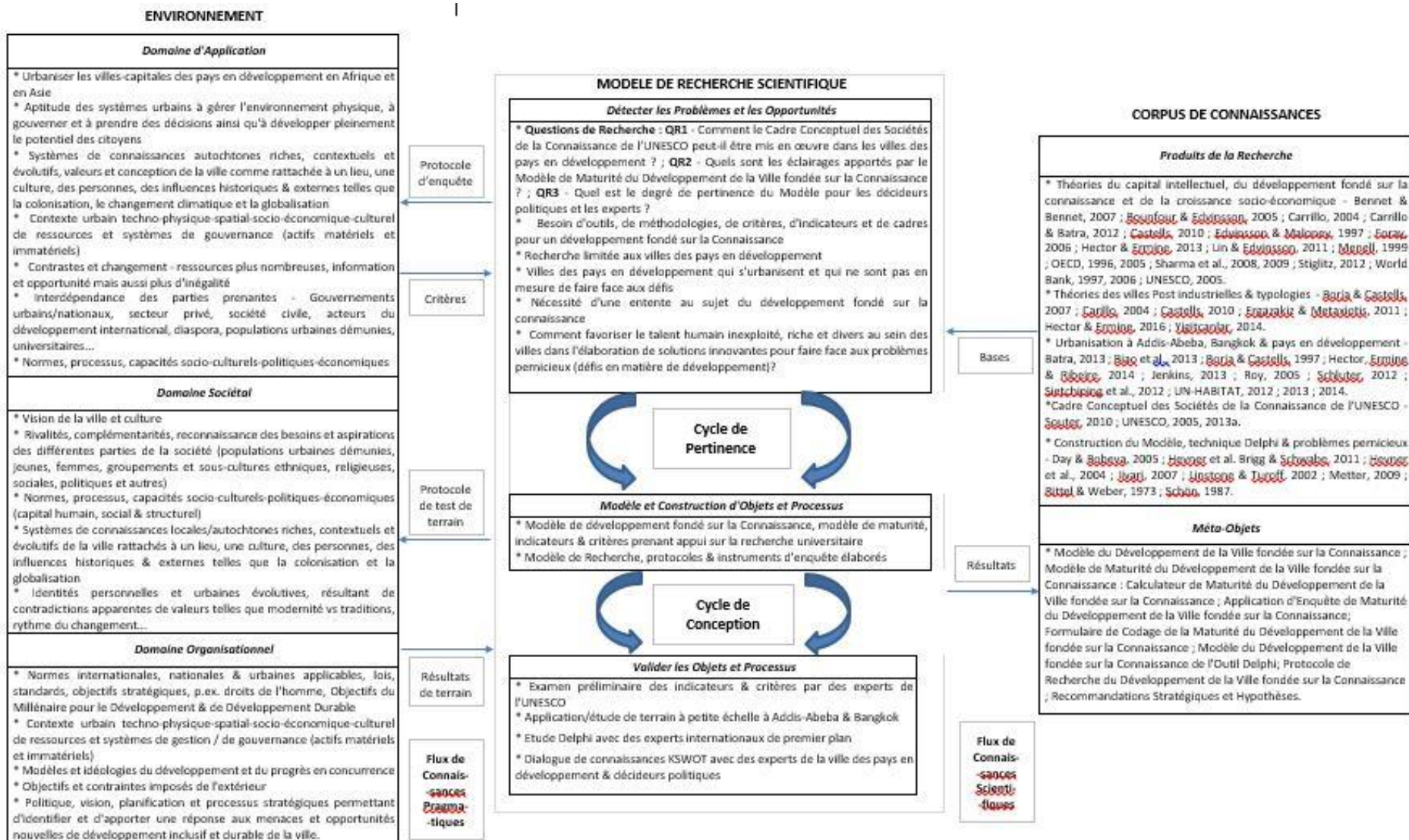
1.5.2 Apports Disciplinaires / Théoriques

En plus d'avoir répondu aux questions de recherche, l'étude a contribué aux méthodologies,

cadres et approches relatifs au domaine récent et évolutif du développement fondé sur la connaissance. La recherche entreprend un travail novateur en développant le premier modèle connu de développement fondé sur la connaissance ainsi qu'un modèle de maturité prenant appui sur le Cadre Conceptuel des Sociétés de la Connaissance de l'UNESCO qui met l'accent sur une perspective humaniste contrastant avec les approches dominantes focalisées sur les aspects économiques (Bresnahan & Gambardell, 2004 ; UNESCO, 2005 ; Yigitcanlar et al., 2012 ; Yigitcanlar & Lönnqvist, 2013). L'étude « emprunte » au Modèle de la Recherche Scientifique des méthodes développées dans le domaine des Systèmes d'Information et vise à développer des approches pour résoudre les « problèmes pernicioeux » dans les villes-capitales à urbanisation rapide des pays en développement. La focalisation sur un ensemble de résultats plus holistiques contribue à la construction théorique dans le domaine de la gestion du niveau sociétal de la connaissance, et au soutien des décideurs politiques dans leur réponse au défi du développement durable. Le fait d'avoir mené une recherche empirique exploratoire dans une des villes les plus importantes d'Afrique offre une meilleure prise de conscience de l'importance accrue des centres urbains des pays en développement sur la scène mondiale. Ce travail entreprend donc de remédier au déséquilibre de couverture de la recherche, afin de contrer le manque d'attention attribué aux problèmes urgents des pays en développement et de contribuer à la mise en évidence du rôle du développement fondé sur la connaissance dans les villes-capitales des pays en développement qui est largement négligé dans les publications scientifiques (Atiqul Haq, 2012 ; Jenkins, 2013; Roy, 2005). La recherche comparative entre Addis-Abeba et Bangkok, les similitudes révélées concernant leurs trajectoires de développement, les problèmes à résoudre et le contexte suggèrent une meilleure pertinence et un potentiel plus important pour le transfert de leçons et de pratiques entre villes du Sud, plutôt qu'entre villes du Nord et villes du Sud dans la résolution des problèmes liés à l'urbanisation des villes du Sud.

Ce travail permet d'entrevoir de nouvelles trajectoires de recherche. Ces dernières incluent un développement conceptuel du modèle plus approfondi, sa vérification empirique sur une base longitudinale ainsi que le développement d'indicateurs / critères pour les ressources immatérielles et matérielles, les processus de connaissance et les objectifs sociétaux stratégiques évolutifs du modèle. Des renseignements supplémentaires ont pu être fournis grâce à des données adéquates provenant d'autres outils tels que l'utilisation d'une équation structurelle et d'un modèle de régression. A cet égard, une compréhension des facteurs qui influencent la réussite des séries de processus de la connaissance est pertinente. Le haut niveau de complexité de ce domaine, tout comme son stade pré-paradigmatique, implique aussi le besoin d'une plus grande collaboration entre les disciplines qui devrait encourager la richesse, les perspectives et l'impact que les emprunts transdisciplinaires peuvent apporter à la recherche.

L'Exposition 28 fournit un résumé du processus de recherche et de ses résultats.



Exposition 28 : Modèle de la Recherche Scientifique appliqué à la présente étude synthétisant les contributions/résultats de la recherche (modes et activités, relations, théories et actions identifiées) (Adapté de Brigg & Schwabe, 2011 : 103)

EXTENDED ABSTRACT

Keywords: knowledge-based development, knowledge societies, primate cities, developing world, maturity model

1.1 INTRODUCTION AND BACKGROUND

1.1.1 The Challenge of Urbanization

Compared to the size of their populations, cities disproportionality impact - positively and negatively - the well-being of nations across a range of social, cultural, environmental and economic measures (Mckinsey Global Institute, 2011; Moore et al., 2003; OECD, 2013; UN-HABITAT, 2012). Since they concentrate wealth, people and a range of tangible and intangible resources, when things go wrong in cities - such as social unrest, natural or man-made disasters - these problems can have significant repercussions. Furthermore, in today's globalized economies, supply chains readily transfer these adverse impacts around the world in often complex ways.

The foregoing effects are amplified in primate cities. The term “primate city”, coined by Mark Jefferson (1939), describes a city whose population is much greater than any other in a given nation, and which acts as the center of national, political, economic and socio-cultural influence (Argenbright, 2013). The percentage of the world's population living in urban centers is expected to increase from 50% in 2013 to around 70% over the next 30 years ((UN-HABITAT, 2014; UNDESA, 2013). This urbanizing trend is expected to heighten the role of cities in the attainment of international development goals at national and global levels.

Previously the largest urban areas were located in developed regions, but they are now being concentrated in developing countries. According to UN-HABITAT, around 90% of urbanization is occurring in the developing¹ world, mainly Asia and Africa, where each day urban areas gain about 200,000 new inhabitants (UN-HABITAT, 2013).

Cities in developed and developing countries must address the opportunities and challenges that impact their long-term sustainability. However, the countries with the most rapid rates of urbanization are also the least prepared – due to weak institutional structures and human capacities – to capitalize on the advantages of urbanization, or to take actions that mitigate adverse impacts. Against this backdrop of opportunity and challenges it is useful to

¹ The World Bank classifies countries based on their annual Gross National Income (GNI) per capita. For 2012 these groups are: low income, \$1,035 or less; lower middle income, \$1,036 - \$4,085; upper middle income, \$4,086 - \$12,615; and high income, \$12,616 or more. Low and middle income countries are collectively referred to as the developing countries. High income countries are often referred to as OECD countries.

consider what can be done to help rapidly urbanizing countries in Africa and Asia successfully manage this challenge.

1.1.2 International Development Goals

What are the development challenges that countries and cities need to leverage knowledge to address? Figure 1 presents some overarching global challenges identified by the United Nations System (UN, 2012) for shaping the Post-2015 Development Agenda. The report identifies four overarching strategic areas: inclusive social development, environmental sustainability, inclusive economic development, and peace and security. These goals will complement the work of the earlier international Agenda of the Millennium Development Goals (MDGs) adopted in 2000 (UN, 2000). These four areas reflect the increasing recognition that economic targets alone are insufficient.

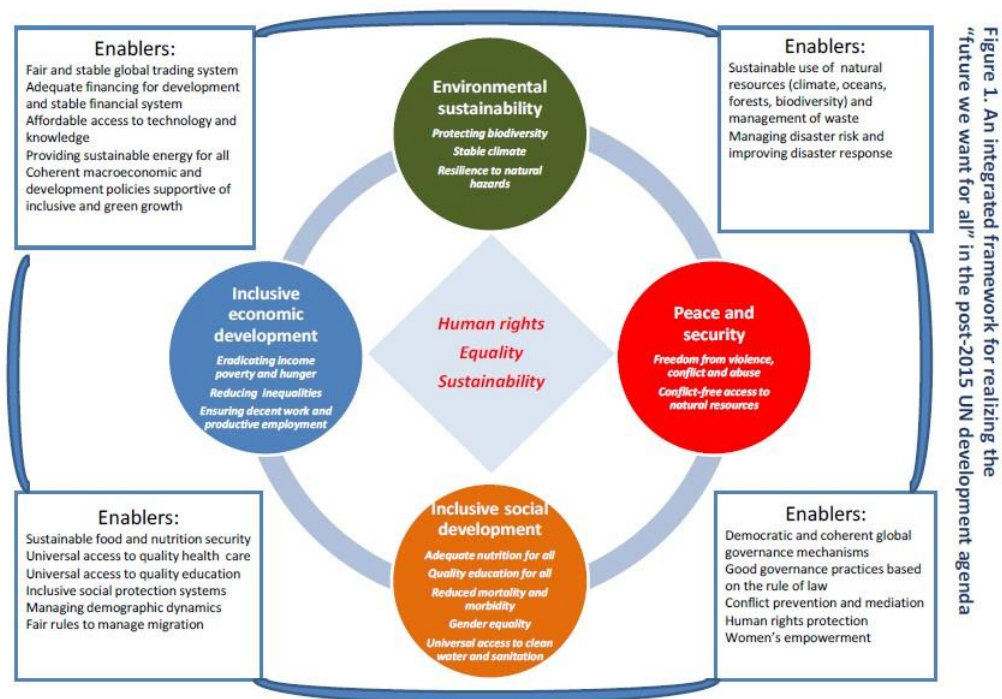


Figure 1: The four overarching areas for development interventions adopted for the United Nation's Post-2015 Development Agenda (UN, 2012)

1.1.3 Knowledge as a resource and driver of social transformation

Increasingly, intangible "cerebral work", information and knowledge mediated processes rather than physical production, commodities or labour intensive activities provide the main sources of growth and socio-economic value-addition (Chen & Dahlman, 2005; OECD, 1996). The pervasiveness and impacts of these interactions have sparked debates on whether these new forms of activities, processes and organization constitute a new social paradigm (Webster, 2002; Castell, 2010). This has led scholars to theorize that humanity is

now in a post-industrial world where the creation, preservation, dissemination and application of information and knowledge are the most important determinants of competitive advantage and human development (Castell, 2010; Drucker, 2008). These changes are regarded as opportunities for resolving current societal problems, but also as a source of new risks and challenges (Boutang, 2011; David & Foray, 2006; Castell, 2010; Foray, 2006; Goede, 2011; Mansell, 2010; Mercer, 2005; Pintér, 2008; UNESCO, 2005).

The Resource based view of the firm (Barney, 1991, Conner, 1991) is an important theoretical framework in the strategic management literature that explains the competitive advantage that firms enjoy as a result of resources that are heterogeneous, valuable, rare, not easily imitated or substitutable. Knowledge, knowledge-based resources and capabilities such as innovation and absorptive capacity are thought to be a special class of resources as they combine the context dependent nature of knowledge with its social complexity (Bennet & Bennet, 2007). These features make knowledge difficult to imitate and could provide a sustained competitive and survival advantage. These insights have led to the knowledge-based view of the firm and provided an important theoretical basis for advancing efforts in knowledge management and related support systems (Alavi & Leidner 2001).

The recognition of knowledge as a source of competitive advantage and value has resulted in increased interest by firms to better understand how this strategic resource could be effectively deployed to achieve strategic goals (Dalkir, 2011). As this understanding evolves, so too has the young field of knowledge management which focuses on applying relevant knowledge to support organizational success (Dalkir, 2011). Knowledge management is informed and nurtured by models and approaches from a range of disciplinary perspectives. These trans-disciplinary influences include inter alia anthropology, sociology, organizational science, information and library science and cognitive sciences amongst others (Dalkir, 2011). They offer a rich, eclectic mixture of ontologies and epistemologies that cut across and challenge the neat silos of structures, methodologies and traditions of academic disciplines.

1.1.4 The intersection of cities, development and knowledge

Knowledge is increasingly seen as a critical factor by international actors, such as the United Nations, for addressing strategic challenges in the field of human development across a range of sectors (Ergazakis & Metaxiotis, 2011; Ritter, 2006; World Bank, 1998; UNESCO, 2005). This interest led to the emergence of knowledge-based development whose theoretical foundations span the fields of economics and knowledge management (Carrillo, 2004). The recognition of cities as an important frontier for addressing human development challenges and their key roles as macro-economic engines has stimulated interest in the role of knowledge-based development in the urban environment (Borja and Castells, 1997; Bounfour and Edvinsson 2005; Carrillo, 2004; Ergazakis & Metaxiotis, 2011; Florida, 2004; Sharma et

al., 2008, 2009; Yigitcanlar & Velibeyoglu, 2008). This in turn has given rise to an area of specialization known as knowledge-based urban development or knowledge cities, a hybrid of knowledge-based development and urban studies which seeks to provide strategic responses to the complex, multidisciplinary challenges cities face (Carrillo, 2004; Yigitcanlar & Velibeyoglu, 2008; Ergazakis & Metaxiotis, 2011).

Knowledge-based development approaches emphasize a more holistic approach, giving attention to economic aspects, environmental factors such as sustainable development but also social dimensions such as tolerance and social cohesion (Borja & Castells, 1997; Ergazakis & Metaxiotis, 2011; Yigitcanlar & Velibeyoglu, 2008). So knowledge-based development is relevant to the goals identified by the United Nations.

This field of research is still in a pre-paradigmatic phase with methodologies, frameworks and approaches that are still evolving (Ritter, 2006; Ergazakis & Metaxiotis, 2011). Although cities in developing countries represent the spaces with the greatest potential – positive and negative - for human growth over the coming years of this century, the bulk of the academic research in this field appears to be addressed towards the developed country context (Atiqul Haq, 2012; Jenkins, 2013; Roy, 2005). This situation raises ethical questions about the intent, purpose, responsibility and actions of researchers. There is still a limited grasp on the conditions that lead to successful development outcomes as well as agreed methods and approaches for applying knowledge-based urban development. Efforts to replicate successful city experiences have often failed as they have focused on limited measures – often economic ones - and aspects of success (Bresnahan & Gambardell, 2004; Yigitcanlar et al., 2012; Yigitcanlar & Lönnqvist, 2013). Furthermore, many of the theories and models originate from frames of reference which prioritize economic values and do not give adequate attention to human rights and diversity.

1.1.5 UNESCO's Knowledge Societies Conceptual Framework

UNESCO advocates “knowledge societies”, founded on human rights principles. Knowledge societies aspire to enable each citizen to achieve their full potential and contribute to solving societal challenges and realizing peace through the equitable use of knowledge (UNESCO, 2005, UNESCO/ITU, 2014). These ideas are analogous to those of knowledge-based development. UNESCO has proposed a conceptual framework for achieving this (See Figure 2). UNESCO’s view has been endorsed by its Member States and informed by academics like Daniel Bell, Manuel Castells, Dominique Foray, Bruno Latour, Robin Mansell, Saskia Sassen, Nico Stehr and Alain Tourraine, who contributed to its World Report on Knowledge Societies (UNESCO, 2005).

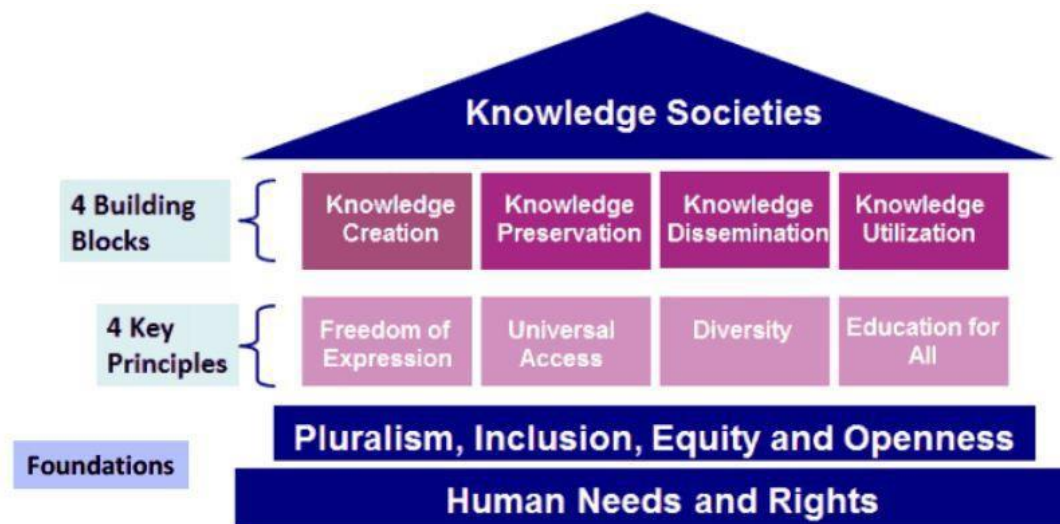


Figure 2: UNESCO's Knowledge Societies Conceptual Framework (Souter, 2010; UNESCO, 2005)

UNESCO's Knowledge Societies Conceptual Framework provides a theoretical basis grounded in human rights for pursuing knowledge-based development. Tables 1 and 2 provide definitions for the constructs in this framework. UNESCO's 2005 World Report (2005, p194) specifically called for the development of tools, indicators, models and other means for assisting countries, particularly the developing ones, to be able to measure knowledge societies. While UNESCO's framework has been promoted and welcomed by its 195 Member States, no empirical testing or further development of the framework has been undertaken.

Table 1: "Key Principles" construct in UNESCO's Knowledge Societies Conceptual Framework

Construct	Definition	References in the Literature
Freedom of Expression	The right of every individual to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.	Peters, 2010; United Nations 1948; UNESCO, 2005, 2010;
Universal Access	Equitable and affordable access by all citizens to information infrastructure (notably to the Internet) and to information and knowledge essential to collective and individual human development.	UNESCO 2003
Cultural Diversity	Culture takes diverse forms across time and space. This diversity is embodied in the uniqueness and plurality of the identities of the groups and societies making up humankind. As a source of exchange, innovation and creativity, cultural diversity is as necessary for humankind as biodiversity is for nature. It is the common heritage of humanity and should be recognized and affirmed for the benefit of present and future generations.	UNESCO 2001, 2005
Education for All	The Provision of quality basic education for all children, youth and adults to provide the foundation and skills to effectively navigate social changes and to equip citizens with the skill needed for learning to learn and to fully participate in their societies.	United Nations 1948, UNESCO 1990

Table 2: The Foundations constructs in UNESCO's Knowledge Societies Conceptual Framework

Name of Construct	Definition	References in the Literature
Human Needs & Rights	These refer to the set of basic needs for survival and the guarantees of human dignity afforded under the international human rights law	De Beco, 2008; OHCHR, 2012; UN, 1948; UN, 2012
Pluralism	An energetic engagement with diversity and expressed through processes such as the active seeking and building of understanding across lines of difference, involving both criticism of another viewpoint & active self-criticism and reflection on one's own viewpoints.	Eck, 2006; Global Centre for Pluralism, 2012; UNESCO, 2000
Inclusion	The ability of an individual to fully exercise and claim the social, cultural, political and other rights afforded to them under the international and national laws.	De Beco, 2008; OHCHR, 2012; UNESCO, 2005
Equity	The belief that people's basic needs should be met consistently and adequately, that burdens and rewards should not be spread too unevenly across communities, and that policy should be applied impartially, fairly and justly to achieve these goals.	Beder, 2000; Clark, 2012; Dulal et al., 2009; Falk et al., 1993, UNESCO, 2005
Openness	A hybrid concept embodying three distinct aspects: transparency and participation in decisions that impact one's well-being; curiosity and willingness to venture outside one's frame of reference; and the use of open standards, collaboration and the sharing of knowledge assets	Downes, 2007; Educational Technology & Media Massive Open Online Course 2013; European commission, 2001; Gisselquist, 2012; Judge et al., 2013, Matthews et al., 2004; McCrae et al. 1992; UNESCO, 2005

1.1.6 Research Objectives and Research Questions Investigated

This mixed methods study seeks to a) develop a Knowledge-based Development Model and Maturity Model, based on UNESCO's Knowledge Societies Conceptual Framework; b) to validate the knowledge-based development model through Delphi panels; c) to field test the maturity models in selected primate cities of developing countries located in Africa and Asia and d) to evaluate the relevance of these models for policy-makers in these countries. This endeavor seeks to supports the recommendations of UNESCO's World Report (UNESCO, 2005) and provide a response to the urban challenge facing cities of the developing word in Asia and Africa. In addition it seeks to provide theoretical contributions through the development of methods, models and criteria for the field of knowledge-based development grounded in human rights principles. The research addresses the following research questions:

RQ1: How can UNESCO's Knowledge societies' concept be operationalized to address the strategic challenges (UN's post-2015 development goals) that cities in the developing world face?

RQ2: What insights does the Knowledge-based Development Models provide?

RQ3: How relevant are the Knowledge-based Development Models to the context in which the policy-makers and experts of selected cities operate and to what extent can it inform the development of action plans?

1.1.7 Personal Motivations

The Researcher is responsible for managing UNESCO's intergovernmental Information for All Programme (IFAP) which helps governments through policy, capacity-building and projects to create conditions for knowledge societies. During my 15 years at UNESCO I have contributed to the design and implementation of national and international development process and I have lived and worked extensively in Africa and Asia-Pacific. These experiences, and a desire to create a better future for my children, fuel my interest.

1.1.8 Significance of the research

This research contributes to advancing the development and operationalizing of the UNESCO Knowledge Societies Conceptual Framework and the Organization's mission to develop policy tools and resources for developing countries. This research provides a first empirical investigation and development of the UNESCO Framework and provides insights into its relevance to policy makers in cities of the developing world. The study also provides a validated models, criteria / indicators and design methodologies and tool that contributes to the academic literature in this pre-paradigmatic field.

The research also contributes to the theory and practice in the knowledge-based development field in a problem domain – rapidly growing cities of the developing world – that is not well understood (Carrillo, 2005; UN-HABITAT, 2014; UNDESA, 2012). The study advances understanding of how to effectively apply knowledge at the societal level to address strategic development challenges and area of central relevance to city managers.

1.2 LITERATURE REVIEW

This literature review explores: the concept of the post-industrial society and the accompanying role of knowledge and intangibles as strategic resources for development; UNESCO's role as an international actor in the knowledge-based development space; cities as critical centers of complex socio-technical activity and their typologies; knowledge-based development models created by researchers; Design Science Research as a problem-solving philosophy and method; the Delphi technique as a systematic process for gaining expert insight into decision-making and theory-building in complex situations; the role of maturity models as tools for gaining insight into complex situations to support assessment and

corrective action; and finally, wicked problems and their implication and relationship to the international strategic development goals.

1.2.1 Knowledge and Intangibles as New Societal Strategic Resources

In many ways, as shown in Table 3, knowledge-based production is intrinsically different from other production forms, which traditionally shaped and defined societies and economies (Carrillo, 2014). Economists describe knowledge as a public good due to its properties of non-rivalrous consumption and non-excludability (Menell, 1999) and its cumulativeness (Foray, 2006). Together, these three properties make knowledge an infinitely renewable, intangible resource which increases its value when shared, provides a basis for future knowledge growth, and which is very difficult to prevent others from consuming. These properties of knowledge, an intangible asset, are in stark contrast to those of tangible assets. Our economies and societies have largely dealt with tangible assets whose values increased with scarcity; in turn, this perspective has been instrumental in shaping such ideas as the concepts of property, competition and social accountability (Castell, 2010; Drucker, 2008; Lessig, 2001). Thus, the increased role of knowledge and its distinctive properties calls into question the values and efficacy of current systems and values.

Table 3: Attributes of Knowledge-Based Production (Carrillo, 2014)

Attribute	Characteristics
Non-rivalry	Possession and use of a good by an agent does not consume it and therefore does not prevent possession and use of the same good by another agent
Non-excludability	Access to a good by an agent does not prevent access by another agent
Non-scarcity	A good can be replicated indefinitely at no extra cost
Non-decrementality	The rent value of successive product units X_i, X_{i+1}, \dots, X_n does not diminish as a function of iterations of the production cycle.
Capital – labour convertibility	Labour may simultaneously operate as capital and become the most critical factor (e.g. talent-intensive companies)
Ubiquity	A good may be simultaneously available to anyone, anywhere
Time & context dependency	A good may decrease in value as a function of time and sometimes may become obsolete soon after it has been released
Connectivity	The sum value of a network increases as the square of the number of members
Intangibility	The market value of a firm can (largely) surpass that of its book value
Externalities	Unintended consequences, both positive and negative can (largely) surpass the value of producing a good

The recognition of information and knowledge mediated processes as the main sources of value addition has led organizations to focus on intangible attributes *inter alia* the skills and competencies of their employees, corporate culture, intellectual property (IP), innovation, brand reputation and business process systems amongst others (Davenport & Grover, 2001; Edvinsson & Malone, 1997; Marr, 2005; Stewart, 1997). Intangibles attributes like the foregoing ones, which organizations are increasingly seeking to leverage for their current and future growth and success, are referred to as intellectual capital (Dalkir, 2011; Stewart, 1997).

Intellectual capital has a strong future orientation; consequently, there is a lag between investments and the benefits that it generates (Bontis, 2004; K  p  l   et al. 2012; Lin &

Edvinsson, 2011; Malhotra, 2003; Stam & Andriessen, 2009). The spillovers and externalities associated with knowledge processes and their non-linear behavior may give rise to emergent properties. These effect make the outcomes of investments and activities uncertain and complex and may account for the limited understanding and recognition of the importance of intangibles outside academic circles (López Ruiz et al., 2014; Salonijs & Lönnqvist, 2012).

A range of perspectives on intellectual capital grounded in the goals and practices of various discipline have emerged. Definitions, approaches and assessment methodologies for intellectual capital exist may be equivalent or sharply contrasting (Marr, 2005). A range of schema for classifying and identifying the components of intellectual capital exist, but the most widely used – and shown in Figure 3 - identifies three broad sub-categories of capitals, namely human, structural and relational capital (Dalkir, 2011). The manner in which these components interact play a decisive roles in determining both how and what forms of value are generated. Increasingly nations, cities and regions are also seeking to identify and leverage their intangible assets (Lin & Edvinsson, 2011).

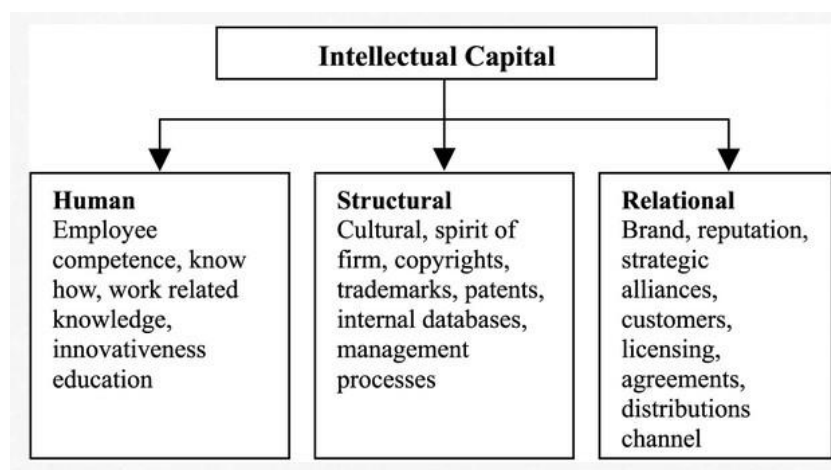


Figure 3: Three components of Intellectual Capital. It is essential for these components to interact and work in sync to achieve optimal performance. [Image provided by Strategybuilders.eu]

Nevertheless, there is growing awareness of the paradigm of knowledge-based and post-industrial society. Evidence of this can be seen in the extensive commitments of financial, personnel and strategic resources to harness the potential of knowledge in addressing economic and social challenges. These commitments include the Lisbon Strategy adopted in Europe in 2000; with the aim of making Europe the leading competitor in the knowledge-based economy with sustainable economic growth and greater social cohesion (EU, 2000; COE, 2011); and the World Summit on the Information Society (WSIS) organized in two phases in Geneva and Tunis in 2003 and 2005, respectively.

As the knowledge economy and society are largely social phenomenon (Carrillo & Batra, 2012), this points to the need to overcome the current focus on economic and

technological dimensions and to give greater emphasis to humanistic aspects. Growing recognition and understanding of the implication of knowledge as an infinitely renewable resource may enable a shift in mindset to non-zero-sum thinking. In such a climate goals such as human rights, equity and peace may well be more easily conceived and attained.

1.2.2 Cities in the post-industrial era

Cities concentrate human, social and structural capital, therefore the extent of a given city's influence at the national, regional or international level can provide indications of its ability to effectively leverage these assets. This ability will also influence the city's viability and determine whether it will be able to attract or lose its citizens in the face of the increased mobility of capital, labor, information and knowledge that globalization has triggered.

While opportunities for economic, social, political and other forms of participation are plentiful in cities, inhabitants may not have equal access to, or even receive these benefits. UN-HABITAT (2014) reports that about one third of urban inhabitants in developing countries live in slums where they face inadequate infrastructure to address sanitation and waste disposal and are thus at a higher risk for a range of adverse health impacts. The inability to overcome deep-seated inequalities may lead to a break-down in social cohesion and create forms of insecurity (Borja & Castells, 1997) that are detrimental to harmonious city life.

Inadequate urban planning and transportation networks can make movement of people, goods and services extremely difficult and significantly curtail a range of socio-economic activities leading to stagnation (UN-HABITAT, 2014). Cities also make a disproportionate contribution to global warming accounting for around 70% of harmful Greenhouse gas emissions (UN-HABITAT, 2011). Cities are therefore at an increased risk for climate change induced risks (OECD, 2013; UN-HABITAT, 2014). It is expected that more conflicts will be occurring in urban areas (Sassen, 2012). If not adequately addressed, these challenges will prevent cities and nations from reaching their full potential.

The growing influence of cities gives them new political and economic power to exert global change which may lead to rivalries between city and national governments (Borja and Castells, 1997; Sassen, 2012). In some cases, national governments may delay reforms or authorizations that city governments require, in order to exert political influence or gain political mileage (Green, 2012; Goodfellow & Titeca, 2012; Goodfellow, 2012). So against the backdrop of the role and the anticipated contribution and evolution of cities, current assumptions and practices must be reassessed.

Castells introduces the concept of information cities in his book *The Informational City* (1989), which he defines as a city whose spatial arrangement is shaped, defined and

continuously transformed by flows of power, finance and information. These flows are facilitated by global telecommunication networks.

According to Castells, these flows manifest their influence in three main ways: namely, by spatially distributing labor, creating milieus of innovation and facilitating decentralization. This situation, Castells points out, leads to asymmetries of information and power, challenges of social inequality and a restriction on opportunities for social mobility. The establishment of centers of knowledge or control can become centres of gravity for talent precluding the ability of other areas to compete for skilled human capital.

In their seminal publication, *Local & Global: Management of cities in the information age*, (1997), Jordi Borja and Manuel Castells seek to provide some solutions to the foregoing challenges. Here they envisage cities where empowered societies interact in global and local processes to mediate economic, technological and cultural relationships based on systems that support efficiency and fairness. Jordi and Castells (1997) therefore envisage for cities key roles as: a) local command centers for managing economic productivity and competitiveness, b) as centers for fostering socio-cultural integration and c) as active agents for ensuring the political representation and decision-making of their citizens. In their view, cities possess attributes that provide them with key levers for exerting global influence far beyond their territories. To do so, cities must focus on three areas: a) supporting their economic productivity and competitiveness by enhancing the social well-being of citizens - by for example providing adequate health care, urban services – building human capital through education and ensuring adequate physical infrastructure; b) fostering conditions for socio-cultural integration and c) ensuring political representation of all groups in decision-making processes.

Cities must endeavor to develop the conditions for joint action. Central to this success is the need for cities to develop the human capital of their citizens. The increasing heterogeneity of societies and the importance of social cohesion, coupled with the global nature of interactions, points to the need for soft and hard skills. Investments to meet the full spectrum of human needs and rights – civil, cultural, political economic and social – as well as attention to the environment, infrastructure and governance systems can ensure the conditions for an engaged and empowered citizenry. Such a foundation will provide the basis for conscientiously managing Castells' flows of information, power and finance and economic.

Cities of the developing world need to recognize that urban solutions from the developed world may not be suitable for them applied (Biao et al., 2013; Jenkins, 2013; Roy, 2005; Schluter, 2012; Sietchiping et al., 2012). Enhanced cooperation between academic institutions, governments and other actors in developing countries is essential for sharing experiences and support capabilities to respond to their unique urban challenges.

1.2.3 Models of knowledge-based development from the academic literature

Over 30 knowledge-based development models with varying purposes and levels of coverage have been created to conduct assessment at the national, regional, city and village levels (Batra, 2013; Garcia, 2008; Bounfour & Edvinsson, 2005; Käpylä et al., 2012; Sharma et al., 2008, 2009; UN-HABITAT, 2002, 2004, 2013; Yigitcanlar et al. 2014, 2014). Ergazakis and Metaxiotis (2011) point to factors such as variations in the conceptualizations of knowledge and disciplinary traditions as influences on the range of approaches to modeling, assessing and evaluating the use and role of knowledge to support development in the urban space. A review of these models critiqued in the academic literature and for which information on their theoretical basis, methodology for the development and derivation of indicators is available was undertaken. These models have been applied in at least one city, region or nation, primarily in developed countries. While the model developers claim to be holistic in their approach, in most cases the economic dimension is prioritized. Most modelers claim to focus on identifying the unique attributes of a place which provide distinct strategic knowledge advantages. However, factors such as the availability of comparable secondary data and interest in benchmarking lead to the selection and use of indicators that promote uniformity.

The models assessed included the Most Admired Knowledge City (MAKCI) Framework, Batra's Knowledge Village Capital Framework (KVCF), UN-HABITAT's City Development, Urban Government & City Prosperity Indices, the Knowledge-Based Urban Development Assessment Model (KBUD/AM), Sharma et al.'s (2008, 2009) Analytical Knowledge Society Framework, Käpylä et al.'s National Intellectual Capital Performance Approach, Marti's Cities Intellectual Capital Benchmarking System (CICBS), the Knowledge City Index (KCI) and the Model for Estimating the Intellectual Capital of Cities (MEICC)

1.2.4 Overview of the models considered

The models examined, with the exception of the UN-HABITAT models have been developed largely by academics in the field of knowledge-based development and intellectual capital. There is considerable variation in terms of the extent of the information provided on their methodological and theoretical derivation. For example, detailed information is available on the MAKCI, which is based on a taxonomical and theoretical framework known as Generic Capitals developed by the World Capitals Institute (WCI) the organization which promotes this model. Extensive statistical analysis including logistic regression has been undertaken to develop greater understanding and confidence of the index it has developed. Annual publications and a website also exist providing resources. Significant emphasis has been placed on developing a global network of experts who are specialized in its usage. The models developed by UN-HABITAT are perhaps second with regard to the availability of information on their development. However, in contrast to the MAKCI the UN-HABIT models appear to

reflect largely the requirements of international development plans and the availability of data related to the specific goals rather than theoretical considerations in determining the model components. The other models are focused on intellectual capital though Sharma et al.'s (2008, 2009) Analytical Knowledge Society Framework does reference UNESCO's Knowledge Societies framework.

There is considerable variation in the types of cities for which the models have been developed or applied to. In the case of the MAKCI, the focus is on cities with populations in the range of 500,000 to 3.5 million inhabitants what it refers to a knowledge city regions and these with population above 3.5 million which it refers to as Knowledge metropolis. The UN-HABITAT given its mandate provides extensive coverage of major cities in its Member States countries irrespective of the sizes while the models such as the MEIC and KCI have high data requirements and have been developed specifically for advanced countries. Marti's CICBS has focused on two Mediterranean cities in Spain and Italy with populations under 100,000. In contrast to the other models Batra's KVCF model is focused on villages in India.

With respect to field implementation again there are considerable variations. The MAKCI has been in use since 2007 and has been applied in field testing to at least 57 cities and the UN-HABITAT models to well over 200 cities. Yigitcanlar's KBUD/AM model appears to have been field tested in around 10 cities and Marti's model in 2 cities. Limited testing has been done with Batra's KVCF, as Sharma et al.'s (2008, 2009) Analytical Knowledge Society Framework and Käpylä et al.'s National Intellectual Capital Performance Approach. The remaining models appear to have been theoretically implemented using secondary data for the countries of interest.

More than 50% of the models use Delphi panels as part of the model development and/or validation process. Given the relatively small number of cities assessed by most of these models, statistical methods offer relatively limited utility. The use of the models for benchmarking and ranking of cities appears to be a significant factor consequently there appears to be greater emphasis on the comparability of cities rather than on seeking to identify the unique strengths or aspects. The MAKCI, Analytical Knowledge Society Framework and KBUD/AM models do incorporate significant qualitative examination thus allowing both hard and soft aspects to be captured. These models all support input output relationships and longitudinal assessments thereby enabling cities to be assessed over time.

On the basis of the foregoing, making UNESCO's Conceptual Knowledge Societies Framework operational as the basis for a knowledge-based development model would require, at a minimum: i) Establishing or demonstrating plausible conceptual links between UNESCO's conceptual framework and knowledge-based development or intellectual capital paradigms; ii) Empirically demarcating or situating the knowledge societies that UNESCO

seeks to assess so that they may be observed or measured; iii) Identifying indicators from the literature for the constructs contained in the UNESCO framework as well as the target indicators or measures of societal challenges to be addressed in knowledge societies; iv) Developing a conceptual model which links input, outputs or processes to desired strategic goals; and v) selecting processes for validating this model.

The focus on developing countries and the earlier literature points to the need to ground the model in the contextual reality of the cities where it will be applied (Biao et al., 2013; Jenkins, 2013; Roy, 2005; Schluter, 2012; Sietchiping et al., 2012). Limitations in such areas as national statistical capabilities and institutional capacities significantly limit both the availability and quality of data (Atiqul Haq, 2012; UNDESA, 2012; UN-HABITAT, 2014). Consequently, the development of the model in this study emphasizes the use of qualitative data which can be obtained by interviewing experts knowledgeable about the city and its specific context as well as the developing country context. Maturity models which are adaptable to such use cases and support assessment and improvement approaches are particularly relevant (de Bruin et al., 2005; Maier et al., 2009; Wendler, 2012).

1.2.5 Wicked Problems

In their seminal article, Rittel and Weber (1973), professors in design and city planning, respectively, state that solutions to problems in the natural sciences are definable and can be found analytically or otherwise. In contrast, problems in the realm of social and governance planning are necessarily always ill-defined and must instead depend on political judgment for solutions. These broad classes of problems which cannot be exhaustively analyzed, nor for which clear cut problem solutions can be developed in advance, are referred to as wicked problems (Dalsagard, 2014; Ramaley, 2014; Rittel & Weber, 1973).

As Rittel and Weber explain, the use of the term “wicked”, is not related to the ethical or moral status of the problem to be addressed. Rather, it serves to contrast this class of problems to “tame” problems such as “to accomplish checkmate in five moves.... [where] the mission is clear” (Rittel & Weber, 1973, p. 160). Consequently, in tame problems it is possible to know once an intervention has been made whether or not a problem has been solved.

Ramaley (2014), points to contemporary societal challenges such as sustainable development, climate change, health issues, clean water, peace and conflict as examples of global wicked problems. The challenges of urbanization, slums, issues of social cohesion and inadequate infrastructure amongst others, that cities in developing countries face, fall within the realm of wicked problems.

Camillus (2008) presents some reasons which explain why political solutions become important in addressing problems of social governance and planning. First, problems on a

social scale involve a large number of stakeholders motivated by differing values and priorities. Consequently, this immediately raises questions about how the problem and responses should be conceptualized and how it affects the current status quo, that is, who wins or loses and who is advantaged or disadvantaged? Second, the roots of the problem are often complex and tangled, therefore, as in the case of the mythical hydra it is not clear where the response should begin. A third challenge that Camillus points out follows closely on from the second one, is that interventions often lead to unexpected changes in the situation. In the case of the mythical hydra chopping off one head of the creature resulted in multiple heads replacing the initial one. Fourth, these problems in whole or in part are usually unprecedented. For example, while seeking to increase tourist arrivals and remove barriers to travel, many countries also worry about the possible specter of increased human trafficking and illegal migration as well as terrorism. However, there are often few models, analogies, prescriptions or experiences that decision-makers can quickly draw on for guidance. Finally, for social and governance planning problems there is no clear indication as to what the correct solution could be; consequently pursuing any approach is accompanied with the prospect of unsatisfactory outcomes as well as the loss of political capital.

In Rittel and Weber's (1973) view it was not possible to tame wicked problems; all that could be undertaken were mitigation factors. From their perspective demographic changes such as increased social heterogeneity were likely to increase inter-group rivalries and make consensus and compromise increasingly difficult. Recognizing that experts and policy-makers also had biases that influenced their advice and decisions Rittel and Weber's (1973) were also not confident that central planning was ideal. They were of the view that supporting the capacity of citizens to express and attain their individual goals and engendering the recognition that societies and their dynamism were a reality was the best that could be done.

Rittel is credited by Rith and Dubberly (2006) as promoting the role of robust dialogue and even argumentation to arrive at common definitions and common goals and actions. It was Rittel's view that only by achieving such consensus that wicked problems could be tamed. According to Rith and Dubberly, Rittel recognized the key role played by political forces in shaping agreement, collaboration and supporting action. In Rittel's view, political approaches also took on an important role in ensuring continued engagement by a broad stakeholder base. Furthermore, as the number of variables that required attention invariably exceeded the cognitive capacities of a single actor or stakeholder group, the political dimension could ensure coordinated and sustained efforts.

The academic literature on wicked problems is very relevant to the international strategic challenges such as the Millennium Development Goals (MDGs) and the Post-2015 Sustainable Development Goals which all cities especially those in the developing world must

address. The strategies enumerated for responding to these challenges emphasize explicitly the importance of broad-based, informed and inclusive approaches and the need for ongoing coordinated efforts. Clearly, the success of any such effort will depend on the capabilities and competencies of the individuals as well as the societal structures for organizing them and the processes which they bring to bear on the identified problems. The focus on common visions, shared goals, engagement, the equitable sharing of benefits and risk, and harnessing relevant knowledge are all reminiscent of the values embedded in UNESCO's Knowledge Societies Conceptual Framework. The nature of wicked problems therefore suggests that knowledge societies are not a destination; rather, they represent a dynamic societal state characterized by engagement and innovation supported by collective decision-making and problem-solving.

1.3 METHODOLOGY AND RESEARCH DESIGN

This study is focused on model building, its validation, and application to a problem context, and the subsequent evaluation of its suitability and value to policy actors in the cities of developing countries. In many ways this process is exploratory as the subject area of enquiry, knowledge-based development, is a newly emerging sub-field without established research traditions (Ergazakis & Metaxiotis, 2011) where there is not a large body of literature and findings from the developed world may not be applicable (Jenkins, 2013; Roy, 2005; Schluter, 2012). UNESCO's Knowledge Societies Conceptual Framework, though prescriptive emphasizes context relevance, adaptation and operationalization and openness to multiple world views. These orientations are consistent with a design science research philosophy which takes a pragmatic view on the creation of tools, methods and models for solving problems (Hevner, 2007; Hevner & Chatterjee, 2010; Hevner et al., 2004; Simon, 1996).

It has been shown in the Literature Review that the informational city, as defined by Castells, represents an overarching category that includes knowledge cities. On the basis of these shared characteristics we regard cities as socio-technical constructs with analogous properties to information systems. This provides a basis for the application of epistemological and ontological paradigms and research methods from the field of information systems in the development of a model for understanding the knowledge-based development of cities.

Design Science Research is a well-established approach in the field of information systems (Dalsgaard, 2014; Hevner et al., 2014; Hevner & Gregor, 2012; Hovorka, 2009; Kuechler & Vaishnavi, 2012; Otto & Österle, 2012; Vaishnavi & Kuechler, 2009). Vaishnavi and Kuechler (2009) describes the ontology, epistemology, methodology and axiology of Design Science Research which given their pragmatic roots bears considerable similarity to the classical pragmatic paradigm. Table 4 provides a comparison of pragmatism and pragmatic Design Science Research.

The ontological perspective in pragmatic Design Science Research views reality as situated and evolving with reality in a state of flux (Dalsgaard, 2014; Dewey, 1998; Vaishnavi & Kuechler, 2009). The situation is composed of the subject and its socio-physico-technical environment. This socio-physico-technical environment includes other people, technological devices and artifacts and the physical space, as well as the socially constructed space that is defined by socio-cultural rules, norms and expectations. The elements within this situation interact with other elements in the space and the subject.

Table 4: Comparison of pragmatism and design philosophical orientation (adapted from Dalsgaard, 2014; Saunders et al., 2011; and Vaishnavi & Kuechler 2009)

	Pragmatism	Pragmatic Design Science Research
Ontology: the researcher's view of the nature of reality or being	External, multiple view chosen to best enable answering of the research question	Multiple contextually situate alternative world states that are socio-technologically enabled
Epistemology: the researcher's view of what constitutes acceptable knowledge	Either or both observable phenomena and subjective meaning can provide acceptable knowledge depending on the research question. Emphasis on practical applied research integrating different perspectives to help interpret data	Knowing through making: objectively constrained construction within a context. Iterative circumscription reveals meaning.
Axiology: the researcher's view of the role of values in research	Values play a large role in interpreting results, with the researcher adopting both objective and subjective points of view	Control, creation and progress that seek to support improvement and understanding
Data collection techniques most often used	Mixed or multiple method designs, quantitative and qualitative.	Developmental process that seeks to measure the impact of the created artifact on the system

In seeking to create change in their environment to achieve a desired end, the designer bases her action on preconceived theories that may be implicitly or explicitly articulated (Dalsgaard, 2014; Dewey, 1998; Vaishnavi & Kuechler, 2009). The results of these actions, combined with a reflective practice serve to either reinforce, enrich or to reject the theories that the designer holds and also enable the designer to become more aware about the beliefs that they hold (Schön, 1987). The knowledge gained from this interaction therefore informs future intervention. The epistemological view is therefore one in which practice and theory inform each other with learning being an ongoing and dynamic response to change.

The designer or researcher is part of the situation and by her presence is able to transform this space and be transformed. The focus of action is therefore to understand with a view to being able to gain insight into how actions may be directed to a given end goal. However, the attainment of the goal is not merely functional but a deeply socio-technical process. This becomes obvious when we ask: Utility for whom? Utility for what purpose and to what end? Utility when, where, how? The pragmatic Design Science Research therefore values transformation, the testing of knowledge and concepts that is aimed towards improvement (Dalsgaard, 2014; Vaishnavi & Kuechler, 2009).

Based on the specific situation and its constraints subjective and objective approaches are used in Design Science Research.

1.3.1 Data collections techniques

Yin's framework (see Table 5) was utilized to select appropriate methods for data collection in the research. On this basis, surveys, archival analysis and case studies were deemed appropriate.

Table 5: Relevant situations for different research methods (Yin, 2014, pp. 9)

METHOD	(1)	(2)	(3)
	Form of Research Question	Requires Control of Behavioral Events?	Focuses on Contemporary Events?
Experiment	how, why?	yes	yes
Survey	who, what, where, how many, how much?	no	yes
Archival Analysis	who, what, where, how many, how much?	no	yes/no
History	how, why?	no	no
Case Study	how, why?	no	yes

The archival analysis involved the classical reviews of archival material, the literature review process as well as limited reviews of print and electronic news sources on the cities selected for study. The archival analysis supported the building of the knowledge-based development and maturity models, enabled the researcher to better understand the context of the cities. The surveys approaches employed were Delphi panels, semi-structured interviews using prepared questionnaire guides and also with the maturity model during field testing. Comparative case studies were developed on the selected cities based on field work and supplemented by material conducted via the other approaches.

1.3.2 Research Reliability and Validity

This study employs a mixed methods design which brings together model building with qualitative as well as quantitative approaches to assess the use and application of the model developed in the problem situations it seeks to investigate. Issues of validity and reliability are relevant to this research as it seeks to develop a new instrument for use in the context of knowledge-based development. The ability of the model to measure the constructs that it seeks to assess and relevance to users are critical markers of its usefulness and applicability.

1.3.3 Development of the Maturity Model

The development of the maturity model was oriented by the guidelines of Mettler (2009) and Hevner et al., (2004) and informed by recommendations from Wendler's (2012) systematic review of the development of maturity models. Population of the model was conducted using the extant literature. Scholarly as well as reputable grey literature sources spanning different disciplines were used to identify indicators and the methodology for

generating scenarios in the model. This process is fully described and illustrated in Chapter 4. These processes enhance content validity.

1.3.4 Validation of the model

Validation of the model involves three phases: a) presentation to subject experts at UNESCO to receive their comments, b) pilot testing of the model in one of the selected cities and c) use of the model with a Delphi panel. All three approaches serve as successive, iterative approaches to refinement and provide a way of assessing mainly the content and face validity of the model and achieving triangulation. The pilot testing within a selected field site provides a means of assessing the model's relevance and thus its credibility. Clear criteria are established *a priori* for termination of the Delphi study.

Purposive selection and snowballing was used to select persons to participate in the validation of the model. A set of relevant criteria were established and prospective participants identified. Including participants from different stakeholder groups allowed a variety of perspectives to inform the process. The use of research protocols provided structure and uniformity. Note-taking, the recording of sessions and sharing these with participants supported accuracy and credibility of findings. These factors contribute to the reliability and validity of the exercise.

The success of the Delphi technique is highly dependent on the quality of the experts involved in the study, the continued participation of experts throughout the study and ensuring a minimum panel size of between 10-18 persons. To ensure that these quality criteria were met, extensive efforts were made using multiple criteria - academic qualifications, publications, experience, knowledge of developing country context, and proficient use of English - to compose these panels. To address the problem of drop-out, a large number of participants were enrolled to ensure the number of experts were at least in the range of 10 -18 persons. Furthermore, the study was designed in advance and conducted electronically so that rounds could be completed quickly and the interest of participants sustained.

1.3.5 Field testing of the model

The field testing of the model involved the purposeful selection of qualified, knowledgeable participants who were interviewed using the maturity model. An interview protocol was developed and adhered to and interview findings shared with participants to confirm their veracity. To gain greater insight into the context of each city the researcher read on-line newspapers gathered on a daily basis through Google news alerts.

The discussion of the researcher findings and recommendations with a select group of policy-makers during the K-SWOT exercise provided a final check on the model and its relevance.

The collection of both qualitative and quantitative data within the maturity model, as well as their subsequent analysis, was used to support triangulation and to obtain richer insights into the problem situation.

Figure 4 presents the research sequence used for conducting this study.

1.4 BUILDING AND VALIDATING THE MODEL

With a view to operationalizing the UNESCO's conceptual framework, Hector and Ermine (2013) have shown its relation to knowledge management and intellectual capital (see Figure 4). In the Hector-Ermine model the principles, foundations and the human actors are viewed to constitute a society's intellectual capital. Consequently, a society's ability to identify, grow and renew this capital and effectively leverage it to create, preserve, disseminate and utilize knowledge to address its specific challenges will determine the effectiveness of its knowledge-based development actions and success in achieving its societal vision.

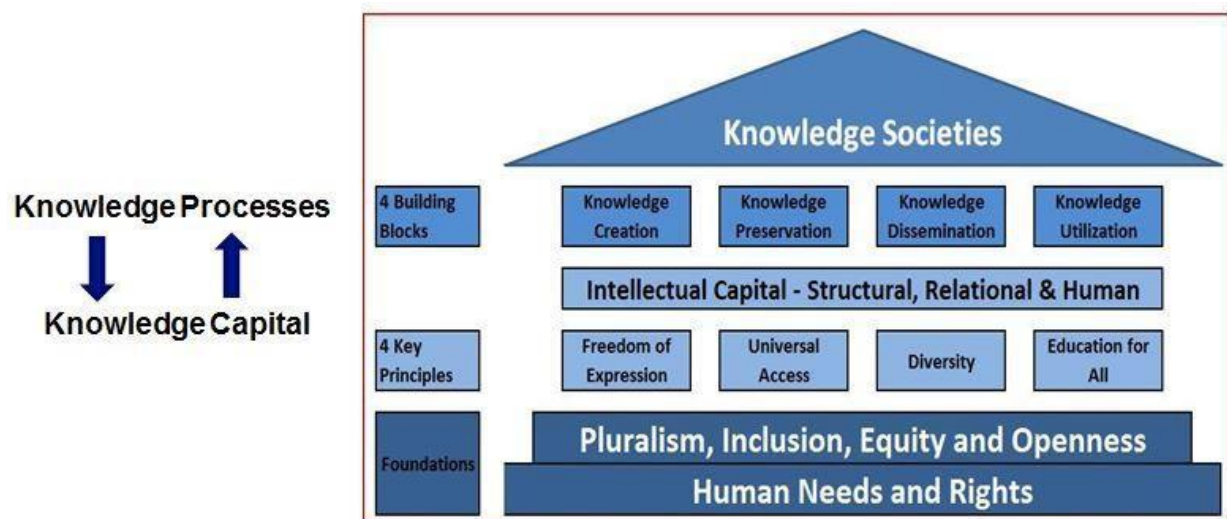


Figure 4: Modified UNESCO Knowledge Societies Conceptual Framework Incorporating Intellectual Capital Processes (Hector & Ermine, 2013)

Revisiting UNESCO's definitions for Knowledge Societies we see that the concept is essentially about using dynamic knowledge-based processes to solve social, economic and environmental problems within a societal system that values and prioritizes specific ethical principles. The types of societal knowledge processes that could be selected, and how effectively they could be utilized, depend on the capabilities of the society as well as the "rules" that govern how the society organizes itself.

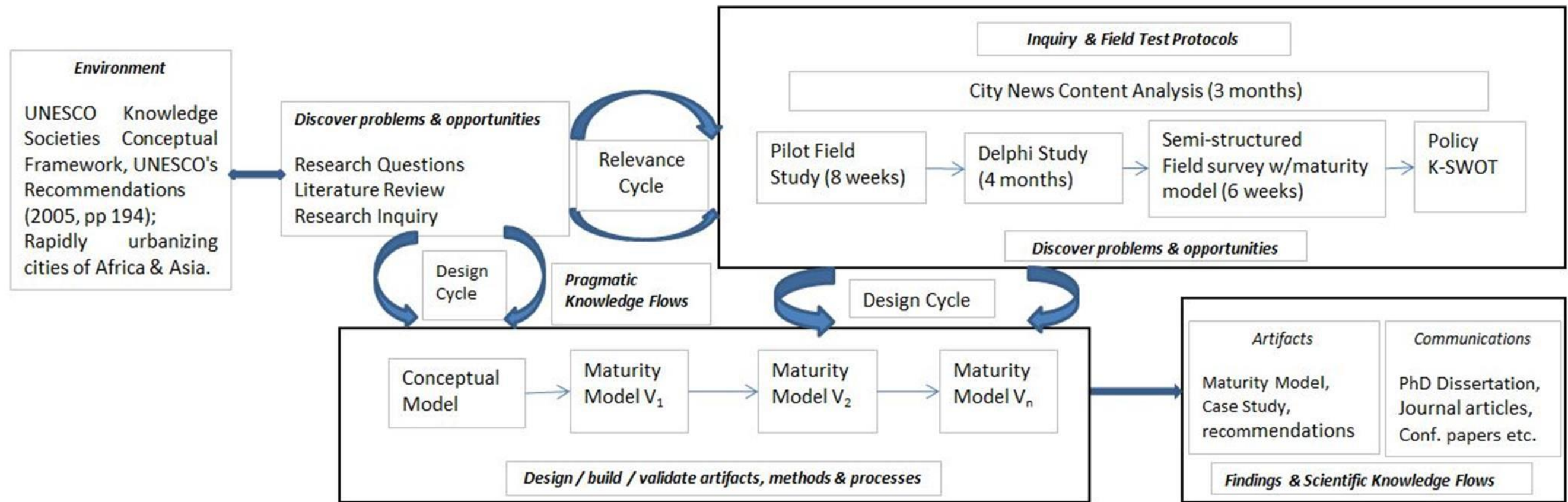


Figure 5: Research sequence followed in the study, indicative time frames and links to Design Science Research cycle and outputs (After Briggs & Schwabe, 2011; Hevner, 2004; Hevener & Chatterjee, 2007)

Contextual circumstances such as tangible resources and the types, quality and quantity of human capital skills, amongst others would influence the strategic goals different societies would pursue and influence the types of knowledge processes that could be selected as well as how effectively they could be utilized.

Navarro et al.'s., (2012) Model for Estimating the Intellectual Capital of Cities (MEICC) integrates efficiency indices which assess the imperfections inherent in converting tangible and intangible resources into desired end goals. However, this efficiency measure would not be static as it would likely be influenced by learning, societal changes and a range of other factors such as motivation that could augment or even decrease efficiency of conversion processes over time. The concept of a maturity measure could readily accommodate and explain these shifts.

Model's like those of Marti's (2005), Yigitcanlar and Lönnqvist (2013), MaKCi (Garcia, 2008; Garcia & Leal, 2010) and Käpylä et al.'s. (2012), point to tangible resources as important components in the process of knowledge-based development. These links are not made explicit in the UNESCO Knowledge Societies Conceptual Framework. In reality, it is only through the application of knowledge in its myriad of forms – know how, know why, know where, know when, know what, know do – to tangible as well as intangible assets that social, economic and environmental goals can be attained. Again, the tangible resource base is also an important consideration in terms of the options available to a society.

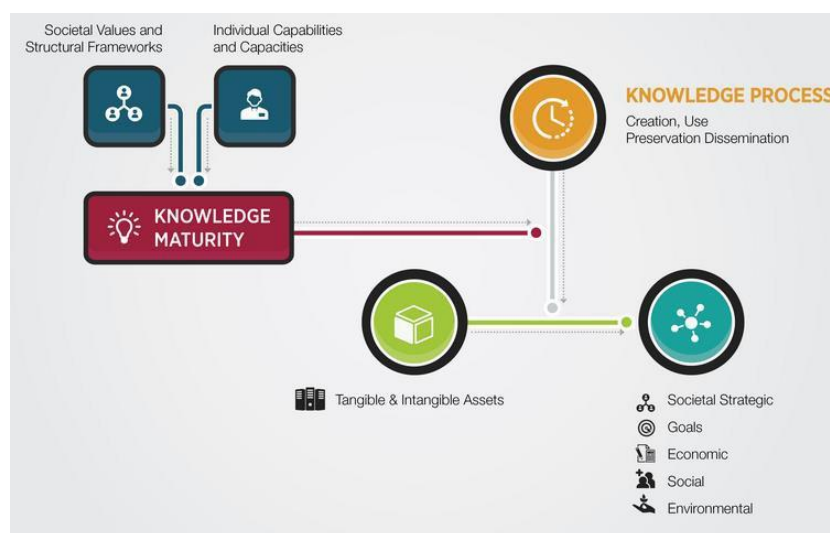


Figure 6: Knowledge-based Development Model for Knowledge Societies

To summarize the above conceptual reflection it is hypothesized that:

Knowledge societies seek to satisfy the collective and individual social, economic and environmental needs (strategic goals) of their members in line with a set of ethical values and principles. To attain their strategic goals and address key challenges, they apply knowledge processes to their tangible and intangibles assets. The effectiveness of any given knowledge

society in applying and selecting knowledge processes to its tangible and intangible assets to achieve its strategic objectives depends on its level of efficiency in applying these knowledge processes. This efficiency is reflective of that society's level of maturity as measured against the principles and foundations as defined in the UNESCO Knowledge Societies Conceptual Framework. On this basis the model in Figure 6 is derived:

1.4.1 Overview of the Maturity Model Development Process

Hevner et al.'s, (2004) Design Science Research guidelines provide an overarching framework for the model building process through the various phases from design to the communication of outcomes (see Table 6). Mettler (2009) provides specific model building procedures which complement Hevner et al.'s framework and ensures the rigor and validity of this process (See Figure 7 & Table 9).

Table 6: Guidelines for Design Science Research (Hevner et al., 2004)

Guideline	Description
Guideline 1: Design as an Artifact	Design-science research must produce a viable artifact in the form of a construct, a model, a method, or an instantiation.
Guideline 2: Problem Relevance	The objective of design-science research is to develop technology-based solutions to important and relevant business problems.
Guideline 3: Design Evaluation	The utility, quality, and efficacy of a design artifact must be rigorously demonstrated via well-executed evaluation methods.
Guideline 4: Research Contributions	Effective design-science research must provide clear and verifiable contributions in the areas of the design artifact, design foundations, and/or design methodologies.
Guideline 5: Research Rigor	Design-science research relies upon the application of rigorous methods in both the construction and evaluation of the design artifact.
Guideline 6: Design as a Search Process	The search for an effective artifact requires utilizing available means to reach desired ends while satisfying laws in the problem environment.
Guideline 7: Communication of Research	Design-science research must be presented effectively both to technology-oriented as well as management-oriented audiences.

For each construct in UNESCO's Knowledge Societies Framework its principle components are identified, indicators/criteria for each components, grounded in the literature, are used to populate the model (See Tables 7 & 8). The Knowledge-based development model and its criteria/indicators are validated through initial expert reviews and a Delphi panel. A field-pilot test of the maturity model developed from the Knowledge-based development model is conducted in Addis Ababa and Bangkok.

Table 7: "Foundation" constructs that contribute to the maturity of knowledge societies

Dimension	Claims based on the literature	References from the literature
Human needs and rights	Respect for human rights establishes societal norms that promote social cohesion, provide ethical and value frameworks that inform governance processes and which shape societal choice making and strategic direction in conformity with international law thereby enhancing predictability. In this regard accountability, awareness, non-discrimination, participation and structural measures play key supporting roles. Enhances the creation and development of social, human and structural capital.	De Beco (2008); Naval et al., (2008); United Nations Human Rights Committee (2011, 2013); UNESCO 2005; United Nations Office of the High Commissioner for Human Rights (2012).
Pluralism	Enabling social diversity to become a social good through active interventions across political social, economic and educational systems ensures the rights and place for all citizens and creates social cohesion. In today's globalized heterogeneous societies pluralism is central to sustainable growth and development and the creation of social capital.	Arizpe et al. (2000); Eck (2006); Organization for Economic Cooperation and Development (2014); Ritzen et al. (2000); UNESCO (2005); Zapata-Barrero & Triandafyllidou (2012).
Inclusion	Allowing segments of their population to remain impoverished, un-empowered and uninvolved in civic/social life prevents a society from leveraging and benefitting from the full breadth of its human capital. This represents a high opportunity cost and may also trigger social instability and unrest. Enhances the development of human, social and structural capital.	Atkinson et al. (2011); Bhalla and Lapeyre (1997); EuroStat (2014); Gandelman, (2011); International Labor Organization (2012); Justino and Litchfield (2005); Klugman (2005); Robinson (2008); Sen (1999); UNESCO (2005); US Census Bureau (2014); World Bank (2013).
Equity	The ability for all members of a society to access economic opportunity, to be fairly treated with regards to the proportion of societal costs and rewards they bear and to be able to consistently access quality social services – e.g. health and education – are good predictors for performance across a range of economic and non-economic measures. Equity also implies the development of measures to enable/advocate for vulnerable groups. Enhances social, human and structural capital.	Beder (2000); Clark (2012); Dulal et al. (2009); Falk et al. (1993); OECD (2012); Stiglitz (2012); UNESCO (2005).
Openness	Openness contributes to improved decision-making, creativity and innovation by broadening participation of citizens in decision-making, providing access to a greater ideation pool and supports creation and access to knowledge-based goods, services and infrastructure at a lower average cost. Enhances social, human and structural capital.	Bissell (2009); Bissell & Boyle (2013); Bugaric (2004); De Dreu et al. (2006); Downes (2007); European Commission (2001); Gisselquist (2012); Goncalo et al. (2009); Judge et al. (2013); Keith (2012); Matthews et al. (2004); McCrae et al. (1992); Saroglou (2002); Sibley and Duckitt (2008); UNESCO (2005).

Table 8: “Key Principles” (Individual capabilities and capacities) constructs in the knowledge city maturity model and their contribution to knowledge based development from the literature

Dimension	Claims based on the literature	References from the literature
Freedom of expression	A climate that fosters the public dissemination of diverse viewpoints, their interrogation, comparison, validation, absorption and remixing to create new ideas and knowledge is fundamental to the development of knowledge societies and economies. Enhances social and relational capital.	Banerjee and Seneviratne (2005); Peters (2010); Starr (2009); Trappel and Maniglo (2009); OHCHR (2012); UNESCO (2005, 2010); UNESCO and WRTC (2001); Valcke (2009).
Universal access to information and knowledge	Promoting universal access to information and knowledge provides a competitive advantage, enhances efficiency, effectiveness, participation and socio-economic well-being. Effective transport infrastructure for movement of people, goods and services; access to local and global digital communications as well the requisite skills are crucial. Enhances social, human and structural capital.	Abdelghaffar & Elmessiry (2012); Ayanso et al. (2011); Azmi and Karim (2012); Bhatia (2001); Biao et al. (2013); Borja & Castells (1997); Campbell (2001); Castells (1989); Delbosc and Currie (2011); Frank (2006); Gray et al. (2006); Jenkins (2013); Hine and Mitchell (2003); Lamont et al. (2013); Lu (2001); Lucas (2004); Mees (2010); Schlichter & Danylchenko (2014); Sietchiping et al. (2012); UNESCO (2005); United Nations Program for Human Settlements (2009).
Cultural and linguistic diversity	Fostering cultural and linguistic diversity provides a means for reaffirming the cultural identity and self-worth of all citizens. It supports the transfer of local knowledge vital for survival – which may not yet be known to the scientific community. Linguistic diversity can support the cross-fertilization of ideas leading to creativity and innovation. Cultural expressions can be leverage to advancing the city’s socio-economic well-being and vitality. Enhances social and human capital.	Burri (2013); Clements (2006); Hill (2004); Johnstone (2002); Lønsmann (2014); Looseley (2004); Marschan-Piekkari et al. (2009); Moreau & Peltier (2004); Pyykkönen (2012); Skutnab-Kangas (2002); Stirling (1998); Stock (2011); UNESCO (2003; 2005); Vromen (1992).
Education for all	Human capital is the key to success – economic, social, and environmental – in knowledge societies. Cities which are best able to develop, attract, retain human capital and equip them with the skills and attitudes to effectively participate as global citizens in the glocal world are likely to do better in solving their problems, setting and achieving development targets. Enhances social, human and structural capital.	Arizpe et al. (2000); Blaug (1976); Bennet & Bennet (2007); Bok (229); Bounfour & Edvinsson (2005); Činčikaitė & Paliulis (2013); Dickmann (2012); Dijk (2006); Edvinsson & Malone (1997); Florida (2002); Gamerschlag (2013); Gillies (2011); Keeley (2007); Iisi & Biondo (2013); Malik et al. (2014); Ng et al. (2007); OECD (2005); Parkinson (2004); Scott (2008); Singhal et al. (2013); Sousa & Bradley (2006); Stiglitz (2012); Tharenou (2003); Tyson (2011); UNESCO (2005); World Bank (199); Yigitcanlar et al. (2007); Yigitcanlar & Lönnqvist (2013); Yitmen (2013).

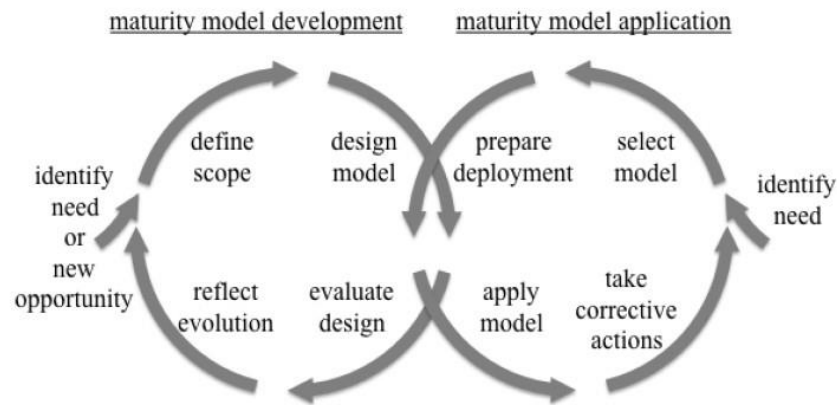


Figure 7: Interplay between model development and application - Mettler, T. (2009).

Table 9: Decision parameters for developing the maturity model (Mettler, 2009)

Phase	Decision parameter	Characteristic			
Define scope	Focus / breadth	General issue		Specific issue	
	Level of analysis/ depth	Group decision-making	Organisational considerations	Inter-org. considerations	Global & societal considerations
	Novelty	Emerging	Pacing	Disruptive	Mature
	Audience	Management-oriented	Technology-oriented	Both	
	Dissemination	Open		Exclusive	
Design model	Maturity definition	Process-focussed	Object-focussed	People-focussed	Combination
	Goal function	One-dimensional		Multi-dimensional	
	Design process	Theory-driven		Practitioner-based	Combination
	Design product	Textual description of form		Textual description of form and functioning	
	Application method	Self-assessment		Third-party assisted	Certified professionals
	Respondents	Management	Staff	Business partners	Combination
Evaluate design	Subject of evaluation	Design process		Design product	Both
	Time-frame	Ex-ante		Ex-post	Both
	Evaluation method	Naturalistic		Artificial	
Reflect evolution	Subject of change	None	Form	Functioning	Form and functioning
	Frequency	Non-recurring		Continuous	
	Structure of change	External / open		Internal / exclusive	

From the academic literature (See Tables 7 & 8) a variety of indicators / criteria for the components of the constructs identified in the model are developed. The maturity models developed from this process are shown in Figure 9, 10 and Table 13.

Increasing maturity ↓	Maturity Levels		Features
	1	Initial	Characterized by adhoc responses; limited human and institutional capabilities to plan, develop and implement policies; top-down decision-making.
	2	Defined	Need for policies, processes and human-capacity recognized and are but resource constraints lack of human and institutional capacity challenges and systems. Still dependent on external resources.
	3	Managed	Enabling environment supported by adequate processes, policies, human and institutional capacity as well as resources. Seeking to find and adapt best practices. Capabilities for medium term planning
	4	Integrated	Recognized as best in class in one or more areas by other cities. Policies, process supported by institutional capacities, capable of long range planning and setting stretch goals.

Figure 8: Maturity levels and their definitions adopted in the model

Maturity Levels		Societal Values and Frameworks											
		Human rights and needs			Pluralism			Inclusion			Equity		
		Level of human rights awareness	Structural measures - National human rights institutions	Anti-discrimination measures	Access to public services and to participate in public	Accountability information on t city affairs made available to	Integration of other ethnicities, races and persons with	Integration of immigrants/migrants	Welcoming different religious and political beliefs and	Willingness to actively see/engage with other	Access to safe and decent work	Women's participation in economic life	Access to health, food, shelter under government
1	Initial												
2	Defined												
3	Managed												
4	Integrated												

Figure 9: Maturity model structure and components for constructs in the Societal Values and Frameworks (Foundations)

Maturity Levels		Individual Capabilities and Capacities												
		Freedom of expression			Universal Access to information and knowledge			Cultural & Linguistic diversity		Education for All				
		Climate for free discussion and exchange.	Diversity, independence and sustainability	Professional standards	Transparent and independent	Transportation network	Government information and services	Afordability of Internet services	Supporting human capacity to use Information and knowledge	Promoting diverse cultural heritage	Promoting multilingualism	Promoting cultural industries	Nurturing talent	Attracting and retaining talent

Figure 10: Maturity model structure and components for constructs in the individual capabilities and capacities (Principles)

1.5 FINDINGS & DISCUSSIONS

1.5.1 Maturity Model

Semi-structured interviews based on the maturity models were undertaken in Addis Ababa with purposefully selected respondents from five stakeholder groups: government, private sector, international development agencies, civil society and academia. A total of 12 interviews were held with representatives from four stakeholder groups. No interviews were held with government representatives. Figures 11 and 12 present some of the results from this assessment. Based on the assessment framework low values of maturity were attained across all constructs (See Figure 12). Given the country's status as a least developed country these measures were not surprising.

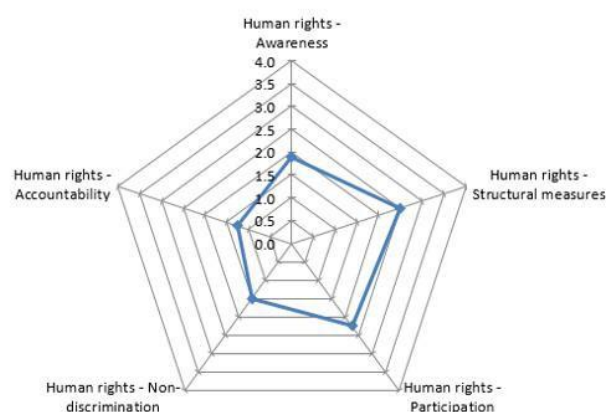


Figure 11: Performance of Addis Ababa on the components of the Human Rights Construct

For the Human Rights construct the city performed strongly on the components of structural measures, participation and awareness as compared to non-discrimination and accountability. Discussions with respondents suggested that the higher level of performance on three of the components could be linked to specific efforts by the city to meet donor requirements for the provision of official development assistance (ODA). As it was quite feasible for the city to meet the donor's requirements without affecting the status quo and effecting the deep-reaching reforms that the donor sought, the city and state could be fully compliant with the funding requirement without in any way enlarging the space for political and public discussion. This finding points to the importance of mixed methods approaches to enhance deeper understanding. It also points to the need to conduct pilot surveys and to calibrate indicators/criteria in each place prior to any large study as their meaning and significance may vary from place to place. This also points to the difficulty of choosing "universally relevant" indicators/criteria in model-building and monitoring processes as their reliability and validity may vary from place to place and over time. This also calls into question the widespread use of secondary data for benchmarking. Finally, this suggests that if cities are to really leverage their unique and advantages and address their weaknesses they may be better served by developing their own specific indicators/criteria and conducting longitudinal comparisons over time rather than focusing as much on peer rankings.

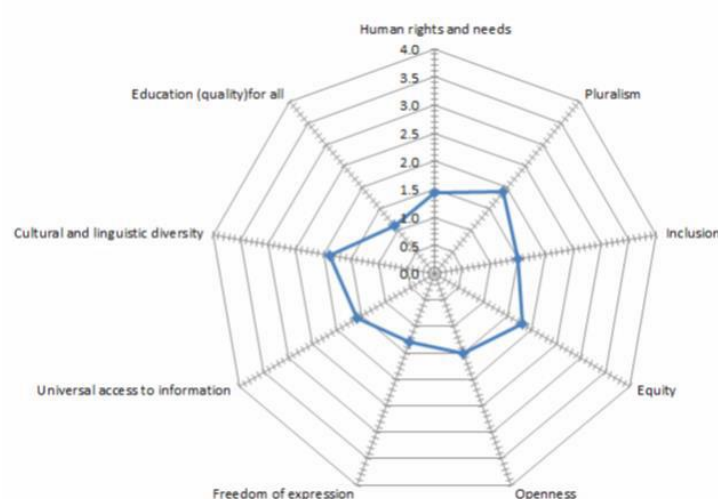


Figure 12: Addis Ababa's Knowledge Maturity assessed on the basis of the Knowledge City Maturity Model

1.5.2 Delphi Study

An international Delphi panel comprising international experts in the fields of knowledge management, knowledge cities, intellectual capital and knowledge-based development was invited to validate the knowledge-based development model. A variety of criteria *inter alia* academic publications, developing city experience, gender, years of professional experience, was used to shortlist the experts who expressed interest in participation. A shortlist of 66 experts was established. Table 10 presents the design criteria for preparing the Delphi study, while Table 12 indicates how consensus evolved through the process. Figure 13 presents the final knowledge-based development model that resulted while Table 13 presents the full set of model components, criteria / indicators and weighting factors. On the basis of the newly revised criteria/indicators, the maturity model was updated.

Table 10: Delphi study, its design and actual implementation (Adapted from Day & Bobeva, 2004)

DESIGN CRITERIA	OPTIONS			
Purpose	Theory/model building	Exploration	Hypothesis testing	Evaluation of options
Participants	Homogeneous		Heterogeneous	
Anonymity	Full	Partial		Not Anonymous
Maximum number of rounds	2	3	4	>4
Participants per round	10-18 panelist per round; minimum acceptable 7 panelists Round 1 – 42, Round 2 – 42, Round 3 - 33			
Concurrency of rounds	Sequential		Simultaneous	
Mode of operation	Face to face	Hybrid		Remote
Communication media	Postal mail	Telephone Face to face Skype	Fax	E-mail/Internet
Other termination criteria	Consensus > 75%; All questions resolved; fewer than 7 panelist in final round; APMO; Between round stability <15%; and non-parametric statistical measures IQR<=1			
Key				
<ul style="list-style-type: none">Planned implementation (If no change indicated this was actual)Additional elements incorporatedAlternative implemented				

Table 11: Comparison of actual and target/expected Delphi panel composition across key selection criteria

Key selection criteria	Actual	Target
Number of pre-qualified experts	66	80 - 145
% Experts with PhD	41%	45%
% Experts with Master	93%	100%
% Females	33%	40%
% > 10 year professional experience	87%	75%
% who have authored or reviewed at least one edited peer-reviewed journal articles, technical report, book , conference proceeding	97%	100%
% of panelists with developing country professional experience	68%	40%
% of panelists living in developing countries	46%	40%
Sectoral representation <ul style="list-style-type: none"> Private sector Government Academia Civil Society International Organizations including the United Nations 	30% 11% 57% 19% 22%	20% 20% 20% 20% 20%
% with experience in 2 or more sectors	22%	10%
Pre-qualified panelist participating in Delphi (Number / %)		
<ul style="list-style-type: none"> Round 1 Round 2 Round 3 Round 4 	42 / 63% 40 / 61% 35 / 53% Consensus	32 - 58 / 40% 24 - 43 / 23% 18 - 32 / 17% 13 - 24 / 13%

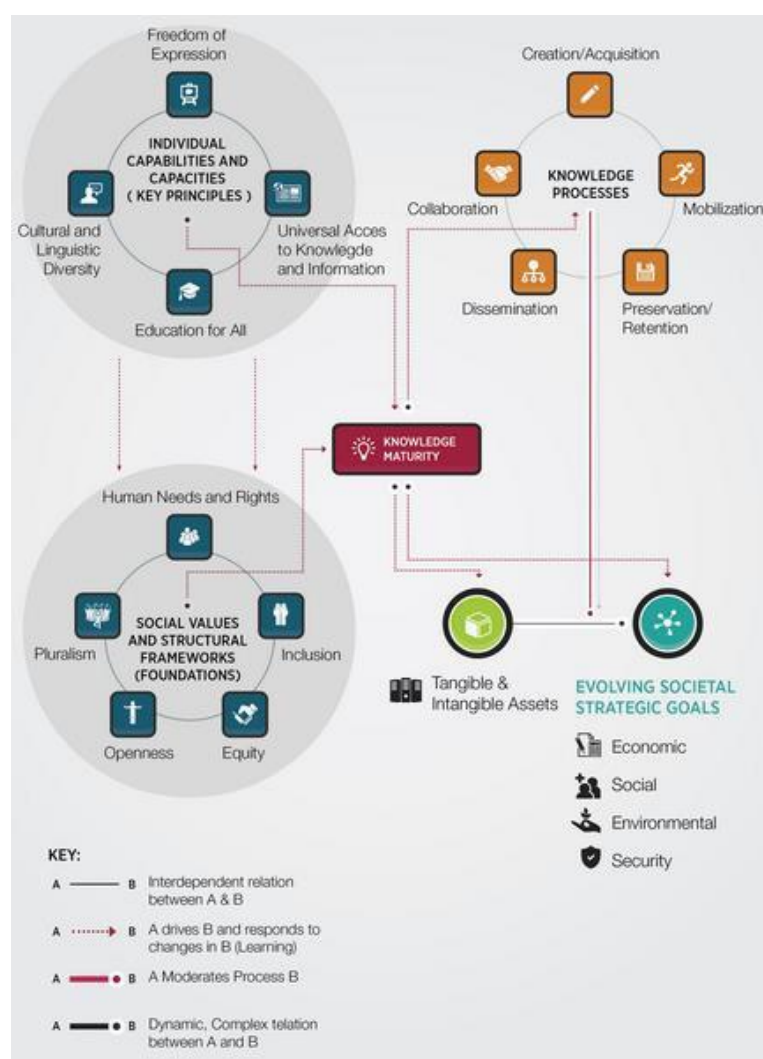


Figure 13: Final Knowledge-based Development Model from the Delphi study

Table 12: Evolution in consensus and number of construct indicators from Rounds 1 to 3

	Round 1	APMO = 76.7%	Round 2	APMO = 87.9%	Round 3	APMO = 88.3%
Question	% Agreeing	Consensus (Yes /No)	% Agreeing	Consensus (Yes /No)	% Agreeing	Consensus (Yes /No)
<i>Does the knowledge-based development model capture the concepts presented in the UNESCO's Knowledge Societies Conceptual Framework?</i>	57.6	No	92.1	Yes	--	--
<i>From a big-picture or macro-level policy perspective does the Proposed Knowledge-based Development Model's represent the role of knowledge in driving or supporting development?</i>	57.6	No	84.2	No	75.0	YES ²
<i>Are the five indicators/criteria adequate for assessing the Human Rights and Needs climate/environment of a city?</i>	87.9	Yes	--	--	--	--
<i>Are the four indicators/criteria adequate for assessing the Pluralism climate/environment of a city?</i>	65.5	No	92.1	Yes	--	--
<i>Are the five proposed indicators/criteria adequate for assessing the level of Inclusion in the city?</i>	75.0	No	94.7	Yes	--	--
<i>Are the five proposed indicators/criteria adequate for assessing the level of Equity in the city?</i>	75.0	No	--	--	90.6	YES
<i>Are the five proposed indicators/criteria adequate for assessing the level of Openness in the city?</i>	81.3	Yes	89.2	Yes ³	--	--
<i>Are the five proposed indicators/criteria adequate for assessing Freedom of Expression in the city?</i>	87.5	Yes	86.5	Yes ³	--	--
<i>Are the seven proposed indicators/criteria adequate for assessing Universal Access to Information in the city?</i>	56.3	No	--	--	87.5	YES ²
<i>Are the five proposed indicators/criteria adequate for assessing the Cultural & Linguistic Diversity of the city?</i>	71.9	No	83.8	Yes ³		
<i>Are the five proposed indicators/criteria adequate for assessing the Education for All construct within the city?</i>	75.0	No	86.5	No	90.6	YES

Table 13: Knowledge-based Development Maturity Model with its constituent hierarchical levels, constructs criteria/indicators, rankings and weighting factors

KNOWLEDGE MATURITY							
Societal Values & Structural Frameworks	Human Rights & Needs	HR1	1	0.27	Awareness		
		HR2	3	0.20	Accountability		
		HR3	4	0.18	Non-discrimination		
		HR4	2	0.20	Participation		
		HR5	5	0.15	Structural Measures		
	Pluralism	PL1	1	0.29	Attitudes around disability/ethnicity/gender equality/race;		
		PL2	3	0.19	Attitudes to immigrants/migrants;		
		PL3	1	0.29	Attitudes to religious/political values/economic status/ sexual preferences or orientation		
		PL4	2	0.24	Attitudes to multi-stakeholder coalition building		
	Inclusion	IN1	2	0.25	Access to safe and decent work opportunities		
		IN2	3	0.19	Level of support for the participation of vulnerable groups (women, youth, persons with disabilities, the elderly and retired) in economic activities		
		IN3	1	0.27	Access to basic social services (health care, shelter, primary and secondary education etc)		
		IN4	4	0.17	Access to civic and political space		
		IN5	5	0.12	Access to credit/training (Level of support for entrepreneurial activity)		
	Equity	EQ1	1	0.26	Access to basic social services including reproductive services		
		EQ2	3	0.20	Evenness in the distribution of social costs and benefits		
		EQ3	4	0.17	Gender mainstreaming in public policies		
		EQ4	5	0.15	Adequate communication and fair access to social services and goods		
		EQ5	2	0.22	Access to property ownership (land and housing) and security of tenure		
	Openness	OP1	3	0.18	Willingness to explore unconventional approaches to solving societal challenges		
		OP2	4	0.15	Promotion of open standards		
		OP3	1	0.23	Transparency in public policy/decision-making processes		
		OP4	2	0.19	Participation in public policy/decision-making processes		
		OP5	5	0.13	Protection of personal privacy and personal data		
		OP6	6	0.11	Promoting an equitable balance between public and private interests in IPR and developing the public domain.		
	Individual Capabilities & Capacities (Key Principles)	Freedom of Expression	FE1	1	0.28	Societal climate for free discussion and exchange	
			FE2	2	0.22	Diversity, sustainability and independence of media channels	
			FE3	4	0.16	Professional standards amongst media practitioners	
			FE4	3	0.18	Independence, effectiveness and transparency of public broadcasting services	
			FE5	5	0.14	Media (on/off-line) regulatory frameworks	
		Universal Access to Information & Knowledge	UA1	1	0.18	Affordability, accessibility and safety of Internet services	
			UA2	2	0.17	Efforts to build human capacity to use ICT	
UA3			3	0.16	Access to reliable and affordable power supply		
UA4			4	0.15	Availability of on-line access to government services		
UA5			5	0.14	Adequacy and accessibility of the public transportation system		
UA6			6	0.10	Presence of local and regional knowledge clusters (including communities of practice, libraries, archives and universities)		
UA7			7	0.09	Support for traditional/local knowledge (preservation, valorization and mobilization)		
Cultural & Linguistic Diversity		CL1	2	0.21	Level of cultural heritage preservation efforts		
		CL2	1	0.22	Level of capacity building in cultural expression sector		
		CL3	3	0.21	Fostering and promotion of multilingualism		
		CL4	5	0.18	Recognition and promotion of cultural industries		
		CL5	4	0.19	Presence of local culture and languages in digital media		
Education for All		ED1	1	0.28	Ability of the city to nurture its human talent (through formal school settings, informal structures and civic spaces)		
		ED2	2	0.22	Ability to attract and retain talent		
		ED3	4	0.17	Support for global citizenship education (intercultural competence)		
		ED4	3	0.18	Efforts to enhance citizens' media and information literacy (digital literacy)		
		ED5	5	0.14	Support for inter-generational transfer of traditional and local knowledge.Ability to attract and retain talent		

1.5.3 Knowledge SWOT and Policy Dialogue

This involved working remotely with a group of 28 technical and policy experts to use the methodologies developed in this study to analyze and develop responses to the challenges facing primate cities of developing countries in Asia and Africa using the methodologies developed in this study. The experts came from the government, private sector, academia, civil society and intergovernmental development agencies and had lived and worked in these environments. Using the methodology, a portfolio of policy and process responses to challenges and goals identified by participants was developed. Participants expressed support for the findings but also recommended that further field testing of the model be undertaken. Comments from participants with respect to the application of the model and the relevance of the insights it provided for follow-up actions included:

- *An excellent effort to codify knowledge cities development model. As no perfect models exist, so attempts to create good models need to be complemented with good field testing.*
- *This has been a challenging exercise and especially for me in Nairobi knowing that there are actual answers to these issues both from academia; research and industry yet they remain largely unimplemented.*
- *I think that theoretically speaking, your model is valid and useful. In my personal point of view, a better graphic design could help to make it more appealing and easy to understand for decision makers and practitioners.*

1.6 CONTRIBUTIONS OF THE STUDY

1.6.1 Answering the research Questions

RQ1: How can UNESCO's Knowledge societies' concept be operationalized to address the strategic challenges (UN's post-2015 development goals) that cities in the developing world face? The study has produced a validated knowledge-based development model based on UNESCO's Knowledge Societies Conceptual Framework, a maturity model for conducting assessment and a methodology for identifying and developing responses to strategic challenges in cities. A number of electronic tools have been developed.

RQ2: What insights does the Knowledge-based Development Models provide? The model articulates a set of hypotheses - validated through expert reviews and a formal Delphi study – between human rights factors and macro-level societal outcomes. The proposed relations, knowledge processes along with the weighting factors derived, can serve to inform decision-making and the development of a portfolio of responses that policy-makers and city leaders may wish to adopt in setting collective goals and driving collective responses to development challenges.

RQ3: How relevant are the Knowledge-based Development Models to the context in which the policy-makers and experts of selected cities operate and to what extent can it inform the development of action plans? The ability of various policy actors in the Addis Ababa and Bangkok field tests as well as the participants in the Policy-dialogues to utilize the tools in assessing their current situations and to develop and to formulate responses point to the relevance and usability of the products developed.

1.6.2 Disciplinary / Theoretical contributions

In addition to answering the research questions, the study has contributed to methodologies, frameworks and approaches in the young and evolving field of knowledge-based development. The research undertakes novel work in developing the first-known knowledge-based development model and maturity model grounded in UNESCO's Knowledge Societies Conceptual Framework which emphasizes a humanistic perspective in contrast to the dominant economic-focused approaches (Bresnahan & Gambardell, 2004; UNESCO, 2005; Yigitcanlar et al., 2012; Yigitcanlar & Lönnqvist, 2013). The study "borrows" the Design Science Research methods developed in the field of Information Systems to develop approaches to solving "wicked problems" in the rapidly urbanizing primate cities of the developing world. The focus on a more holistic range of outcomes contribute to theory-building in the area of societal-level knowledge management, and supporting policy-makers in their response to the challenge of sustainable development. Undertaking exploratory empirical research in one of the most important cities in Africa, provides greater recognition of the increasing importance of the population centers of the developing world in global affairs. This work therefore serves to rectify the imbalance in research coverage, to critique the dearth of attention given to the urgent problems of the developing world and contribute to raising the profile in the academic literature to the role of knowledge-based development in primate cities of the developing world which is largely neglected (Atiqul Haq, 2012; Jenkins, 2013; Roy, 2005). The comparative research between Addis Ababa and Bangkok, the similarities uncovered in their development trajectories, problems to be addressed and context suggests a greater relevance and potential for the transfer of lessons and practices between cities of the South, than between the cities of the North and South in solving the problems of urbanization in the South.

This work serves to identify new research trajectories. These include further conceptual development of the model, its empirical testing on a longitudinal basis as well as the development of indicators /criteria for intangible and tangible assets, knowledge processes and the evolving societal strategic goals components of the model. With adequate data other tools such as the use of structural equation and regression modelling may provide additional insights. In this regard an understanding of the factors that influence the success of knowledge

process portfolio is relevant. The high level of complexity in this field as well as its pre-paradigmatic stage also points to the need for greater collaboration across disciplines and is expected to encourage the richness, insights and impact that trans-disciplinary borrowings can bring to research.

Figure 14 provides a synopsis of the research process and its outcomes.

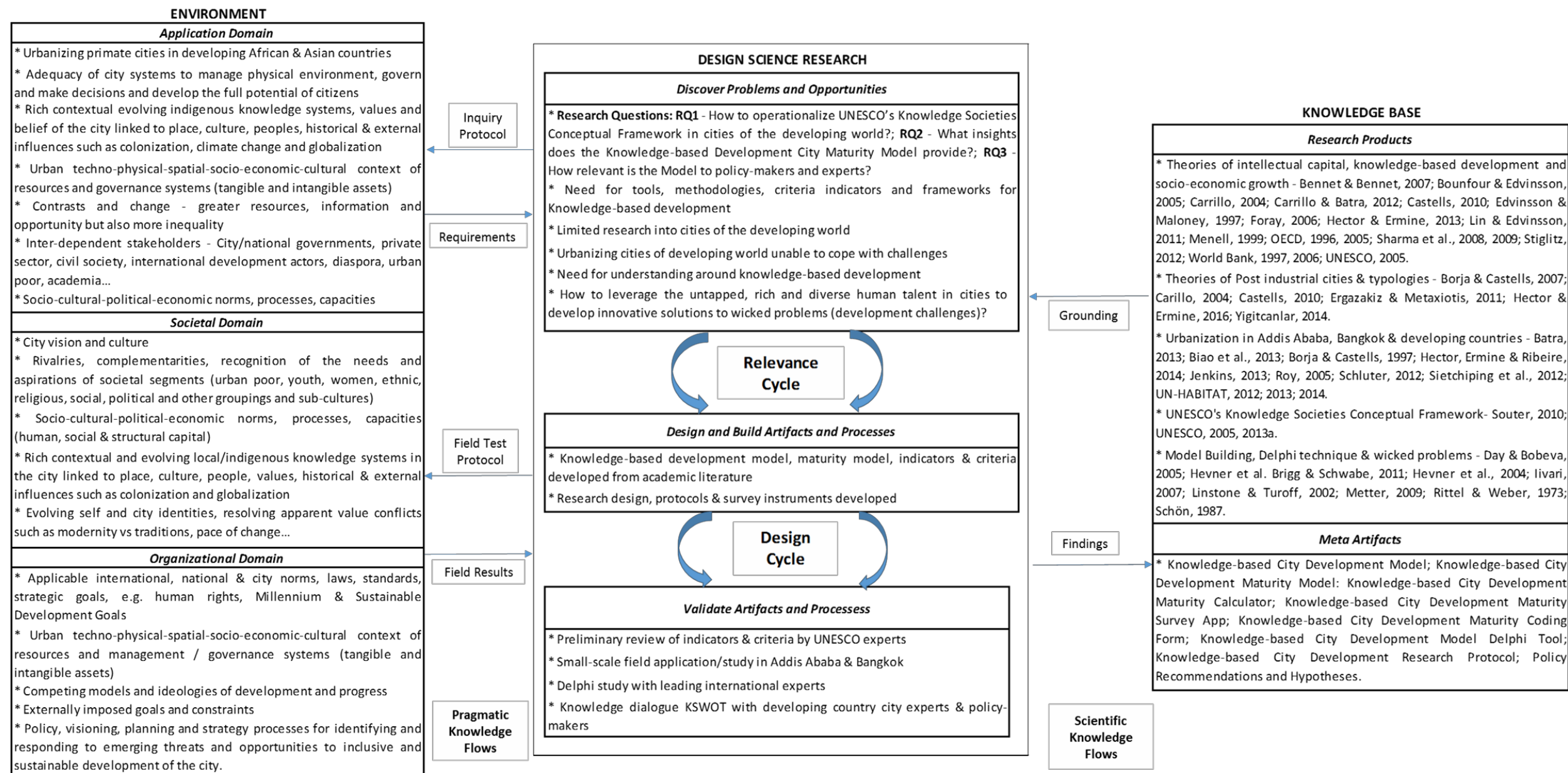


Figure 14: Design Science Research model applied to the current study synthesizing research contributions/outcomes (modes and activities, relationships, theories and actions identified) (Adapted from Brigg & Schwabe, 2011: 103)

DELPHI STUDY



DELPHI PANELIST REGISTRATION SHEET

I would like to express my appreciation for your interest in participating in this Delphi study which seeks to validate a knowledge city maturity model based on UNESCO's Knowledge Societies Conceptual Framework.

This study is being undertaken within the framework of my doctoral research, which is conducted under the supervision of Dr. Jean-Louis Ermine of the Telecom Ecole de Management in France (<http://www.telecom-em.eu/>), Dr. Vincent Ribiere and Dr. Alex Bennet of the Institute of Knowledge and Innovation - South East Asia (IKI-SEA) at Bangkok University in Thailand (<http://www.iki-sea.org/> and <http://phdkim.bu.ac.th/>). The study will involve a maximum of 4 rounds of consultation.

The study outputs are expected to contribute to implementing recommendation 10 of UNESCO's World Report: Towards Knowledge Societies, and to supporting cities of the developing world in their efforts to pursue the post-2015 Development Agenda and to achieve the sustainable development goals (SDGs).

The study will draw on an inter-disciplinary body of knowledge from the following areas:

Creative / digital / green / knowledge / intelligent / resilient / smart / wired cities
Culture for development
Economics of knowledge
Education for development
Human rights
Information and communication technologies for development (ICT4D)
Intellectual capital
International, regional and national development strategies and policies
Knowledge-based development
Knowledge management
Knowledge societies
Sustainable urban development

As a first step I would like to invite you to complete the on-line registration sheet below which should require about 4 - 7 minutes of your time.

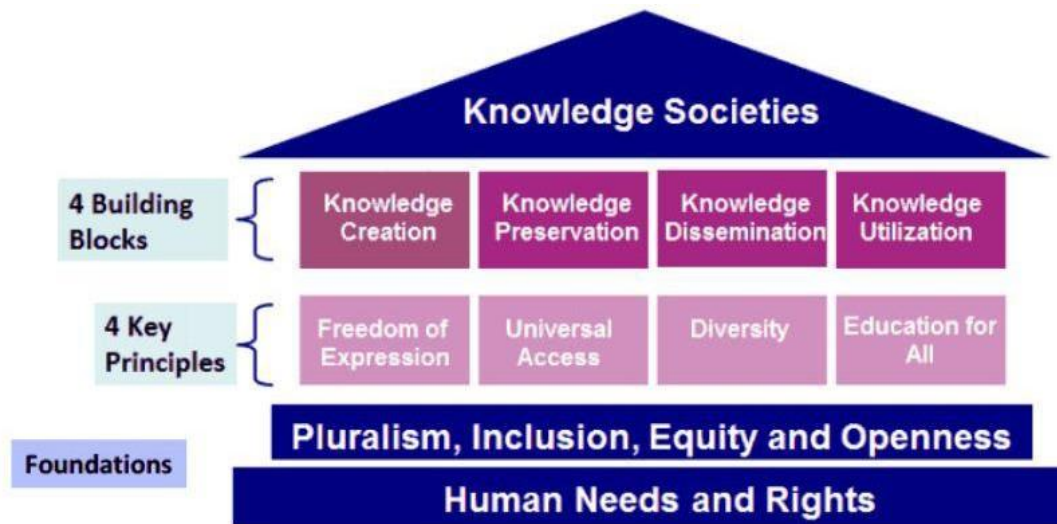
If you have any comments or questions about this survey you may contact me at paul.hector@telecom-em.eu

Once again thank you for honoring us with your participation.

With my best regards,
Paul Hector

* Required

UNESCO's Knowledge Societies Conceptual Framework



Contact & Background Information

Please Answer the Following Questions

1.

E-mail: *

Please indicate the most reliable e-mail address for contacting you.

.....

2.

First Name: *

.....

3.

Family Name: *

.....

4.

Gender: *

Mark only one oval.

☐ Female

☐ Male



5. **What is your age Group (Years)?:**
Mark only one oval.

- ☐ 20 – 34
☐ 35 – 49
☐ 50 – 64
☐ 65 – 79
☐ 80 – 94
☐ >95

6. **In which country do you live?: ***

.....

Professional Information

7. **Please indicate your employment status: ***
Mark only one oval.

- ☐ Employed
☐ Retired
☐ Unemployed
☐ Other:

8. **Years of professional experience? ***
Check all that apply.

- ☐ 0 – 4
☐ 5 - 9
☐ 10 - 14
☐ 15 - 19
☐ 20 – 24
☐ 25 - 29
☐ 30 - 34
☐ 35 - 39
☐ > 40
☐ Other:



9. **What is your highest academic qualification?**
Mark only one oval.

- ☐ PhD
- ☐ Post Graduate Certificate / Diploma
- ☐ M.A / MSc.
- ☐ B.A. / BSc.
- ☐ Other:

10. **Please indicate the sector(s) in which you are currently employed: ***

Check all that apply. If you are a retired non-practicing professional, or are currently unemployed, please indicate the sector(s) in which you were last engaged.
Check all that apply.

- ☐ National Public Sector Intergovernmental
- ☐ Organization International
- ☐ bilateral/multilateral
- ☐ National Private Sector
- ☐ International/Multinational Private Sector
- ☐ National NGO or National Civil Society
- ☐ International NGO or International Civil Society
- ☐ Academic/Research Institution
- ☐ Other:

11. **Employer:**

If you are a retired, non-practicing professional, or are currently unemployed, you may indicate a previous employer.

.....

Professional Information Cont'd

12. **What is your current job-title(s)?**

If you are a retired, non-practicing professional, or are currently unemployed, please indicate the highest job-title which you have held.

.....

.....

.....

.....

.....



13.

How would you describe your level in your Organization(s)? *

If you are a retired, non-practicing professional, or are currently unemployed, please indicate the highest level at which you have been employed.
Check all that apply.

- ☐ Upper Management (e.g. Director, CEO)
- ☐ Middle Management / Technical Expert
- ☐ Junior / Entry level professional
- ☐ Other:

14.

Which of the following characterizes your primary professional role(s)? *

Please check all that apply. If you are a retired non-practicing professional, or are currently unemployed, please indicate what you consider to be the most important role in which you were engaged.

Check all that apply.

- ☐ Strategic: Creating the long term vision and policy of the organization.
- ☐ Managerial: Monitoring and directing progress towards realizing the Organization's strategy
- ☐ Tactical: Leading the implementation of processes that fulfill the Organization's strategy and directing progress towards realizing the Organization's strategy
- ☐ Advisory: Providing expert opinion based on research and/or analysis to support decision-making or other actions
- ☐ Other:

15.

For which of the following types of publications have you been an editor or reviewer?: *

Please indicate all that apply.

Check all that apply.

- ☐ International/Regional peer-reviewed journals
- ☐ International/Regional peer-reviewed conference Proceedings
- ☐ Book (Academic, Practice or Policy -oriented)
- ☐ Book chapters
- ☐ Policy reports/white papers/advisories
- ☐ Practitioner-focused magazines
- ☐ Policy briefs or advisories
- ☐ Other:



16.

For which of the following types of publications have you been an author?: *

Please indicate all that apply.

Check all that apply.

- ☐ International/Regional peer-reviewed journals
- ☐ International/Regional peer-reviewed conference Proceedings
- ☐ Book (Academic, Practice or Policy -oriented)
- ☐ Book chapters
- ☐ Policy or technical reports / white papers
- ☐ Practitioner-focused magazines
- ☐ Policy briefs or advisories
- ☐ Other:

17.

From the following list, please indicate areas in which you consider yourself to be knowledgeable: *

Please check all that apply.

Check all that apply.

- ☐ Culture for social and economic development
- ☐ Education for development
- ☐ Human rights
- ☐ Information and communication technologies for development (ICT4D)
- ☐ Intellectual Capital
- ☐ International, regional, national development
- ☐ Knowledge-based development
- ☐ Creative / digital / knowledge / intelligent / resilient / smart / sustainable / wired cities
- ☐ Knowledge management
- ☐ Sustainable urban and regional development
- ☐ Other:

Professional Information Cont'd

18.

Within the past 10 years have you lived in a sub-Saharan African or a developing Asian country? *

A list of developing countries is available at the following URL: <http://www.isi-web.org/component/content/article/5-root/root/81-developing>

Mark only one oval.

- ☐ Yes
- ☐ No



19. If during the past 10 years you have lived in a sub-Saharan African or a developing Asian country, please indicate their name(s):

.....

.....

.....

.....

.....

20. Within the past 10 years have you conducted professional activities in/for sub-Saharan African or developing Asian countries? *

A list of developing countries is available at the following URL: <http://www.isi-web.org/component/content/article/5-root/root/81-developing>

Mark only one oval.

☐ Yes

☐ No

21. If during the past 10 years you conducted professional activities in/for sub-Saharan African or developing Asian countries please indicate their name(s):

.....

.....

.....

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22. Please indicate the name and e-mail contacts of up to 3 other persons known to you who may be interested in participating in this study.

.....

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.....

Thank you very much for registering, I will be contacting you within 48 hours to provide further information.

BACKGROUND INFORMATION FOR PANELISTS

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Background information for Delphi Panellists

Purpose

This Delphi study seeks to validate a set of indicators and scenarios in a proposed knowledge city maturity model. This model is based on UNESCO's knowledge societies conceptual framework. This study will inform the following research question:

How can UNESCO's knowledge societies concept be operationalized to address the strategic challenges that cities in the developing world face?

This background paper introduces UNESCO's knowledge societies conceptual framework, and provides an overview of the development by the researcher of the knowledge city maturity model that this study will evaluate.

Overview of UNESCO's Knowledge Societies Conceptual Framework¹²³

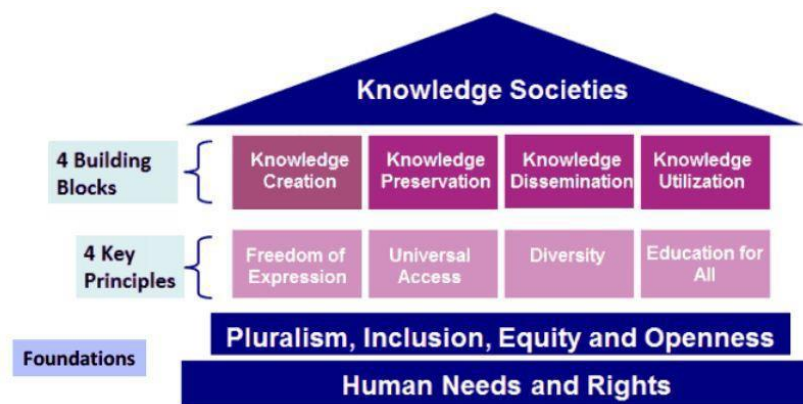


Figure 1: UNESCO's knowledge societies conceptual framework (UNESCO, 2010)

UNESCO's Knowledge Societies concept (Figure 1) seeks to foster human development through the creation, sharing, preservation and application of knowledge. This vision requires an enabling environment that supports the full realization of human rights (UN, 1948) the promotion of peace, and a commitment to ensuring the

common welfare, inclusion and the full participation of all citizens.

UNESCO's vision is based on a society that supports human rights, which values pluralism, inclusion, equity and openness provides the foundation on which the society operates. The "Foundations" in turn provides the values on which the society draws to shape its vision of development, to set goals and to develop processes for achieving these goals that are in line with its ethical values. Definitions for the five constructs in the foundations are provided in **Table 1**.

The 4 "key principles" are qualities which enable individuals to have the means and resources to develop themselves and to operate within their specific context to develop their full potential, achieve their personal goals and contribute to the societal goals. Definitions for the four constructs in the key principles are provided in **Table 2**.

¹ UNESCO. (2005). UNESCO world report: Towards knowledge societies
<http://unesdoc.unesco.org/images/0014/001418/141843e.pdf>

² UNESCO. (2010). Towards inclusive knowledge societies: a review of UNESCO's action in implementing the WSIS outcomes <http://unesdoc.unesco.org/images/0018/001878/187832e.pdf>

³ UNESCO. (2014). Building inclusive knowledge societies: a review of UNESCO's action in implementing the WSIS outcomes https://www.itu.int/wsris/review/inc/docs/ralfreports/WSIS10_ALF_Reporting-UNESCO.pdf

The “4 building blocks” represent the knowledge processes which enable the society to address its challenges and achieve its goals.

The following quotations capture the essence of UNESCO’s knowledge societies vision:

Knowledge societies are about capabilities to identify, produce, process, transform, disseminate and use information to build and apply knowledge for human development. They require an empowering social vision that encompasses plurality, inclusion, solidarity and participation.

(UNESCO, 2005:27)

Knowledge Societies “are societies in which people have the capabilities not just to acquire information but also to transform it into knowledge and understanding, which empowers them to enhance their livelihoods and contribute to the social and economic development of their communities”.

(UNESCO, 2014:19)

UNESCO does not propose a single, ideal knowledge society that should be replicated in every country. Instead, each nation and community has a responsibility to use the principles and foundations, drawing on its own unique experiences, advantages and needs to harness its own local, traditional and indigenous knowledge as well as other types/sources of knowledge to create the conditions which allow each citizen to attain their full potential and enable the society to prosper.

Linking UNESCO’s knowledge societies conceptual framework to the academic literature on knowledge management and intellectual capital

Intellectual capital provides a useful KM conceptual frame for examining UNESCO’s Knowledge Societies Conceptual Framework. Intellectual capital refers to the intangible assets - such as the skills and knowledge of employees, intellectual property, and relationships with creditors and customers - that may be leveraged to generate wealth (Edvinsson & Malone, 1997; Johnson, 1999; Sharma et al., 2008; Yi-Chun & Yen-Chun, 2010). Intellectual capital is viewed as having 3 central constituent elements - human capital, relational or social capital and structural or organizational capital (Johnson, 1999; Roos et al., 2001; Yi-Chun & Yen-Chun, 2010). Human capital is the knowledge (tacit as well as explicit), abilities and capacities within and used by the individual; relational/social capital is the knowledge embedded in and available through social networks while structural/organizational capital refer to the codified processes, infrastructures, values and systems for making decisions and delivering goods and services and for setting and achieving goals.

While the foregoing authors focus on the firm, the World Bank (2006) has sought to apply the intellectual capital concept at the national level. The World Bank characterizes intellectual capital as the labor force’s skills and know-how (human capital), degree of trust among people in the society and their ability to work together towards common purposes (social capital) and governance elements such as an effective judicial system that contribute to boosting the socio-economic life (structural capital).

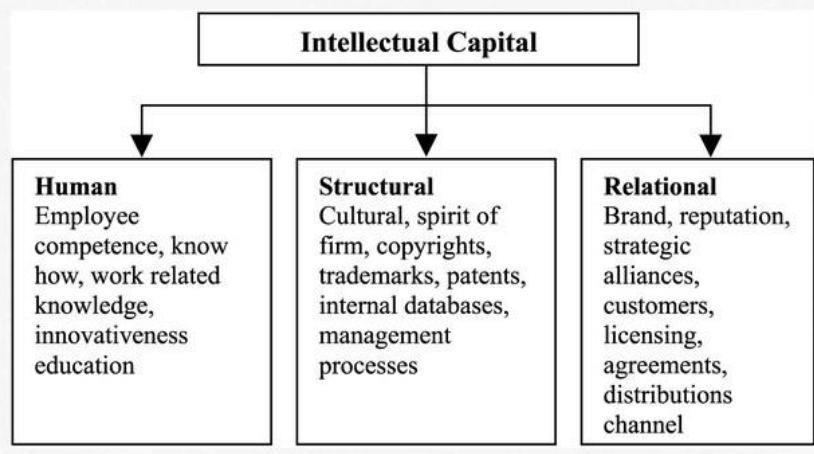


Figure 2: Three components of Intellectual Capital. It is essential for these components to interact and work in sync to achieve optimal performance. [Image provided by Strategybuilders.eu]

The foundations and key principles expressed in the UNESCO vision of KS are related to the constituents of intellectual capital but go well beyond these in giving consideration to non-economic and societal aspects. For example, the foundational principles of human rights, inclusion, diversity and participation can all be seen as contributing to strengthening societal/relational capital and therefore facilitating human interactions that are conducive to processes such as socialization, externalization, combination and internationalization necessary for creating new knowledge (Nonaka & Takeuchi, 1995).

The shift to a broader understanding of value that goes beyond economic measures (profit) to also take into account aspects such as people (well-being), planet (environment) and probity (questions of ethics and human rights) points to the relevance of the UNESCO framework. There is also growing work by noted economist and other academics such as Sachs (Helliwell et al., 2012), Sen (1999) and Stiglitz (2012) amongst others whose work point to the relevance of the constructs in the UNESCO Knowledge Societies Conceptual Framework.

To operationalize UNESCO's conceptual framework, Hector and Ermine (2013) have shown its relation to knowledge management and intellectual capital (see Figure 2). In the Hector-Ermine model the principles, foundations and the human actors are viewed to constitute a society's intellectual capital. A society's ability to identify and manage this knowledge capital in its myriad forms; know how, know why, know where, know when, know what, know do, etc.; and effectively leverage it to create, preserve, disseminate and utilize knowledge to address its specific challenges, will determine the effectiveness of its knowledge-based development actions and its success in achieving its societal goals. The contribution of the constructs in the foundations and principles to intellectual capital are presented in **Tables 4 & 5**.

The capabilities of a given society at the key principles and foundations level is therefore indicative of its ability to leverage knowledge to solve its problems within its specific context, i.e. its knowledge maturity. The challenge is to develop a relevant set of indicators to assess this maturity.

Various researchers (Atiquel Haq, 2012; UNDESA, 2012; UN-Habitat, 2014) have pointed to limitations in national and institutional statistical capabilities in developing countries. As this study is focused on developing countries the use of qualitative indicators that can support decision-making and qualitative data collection processes are emphasized.

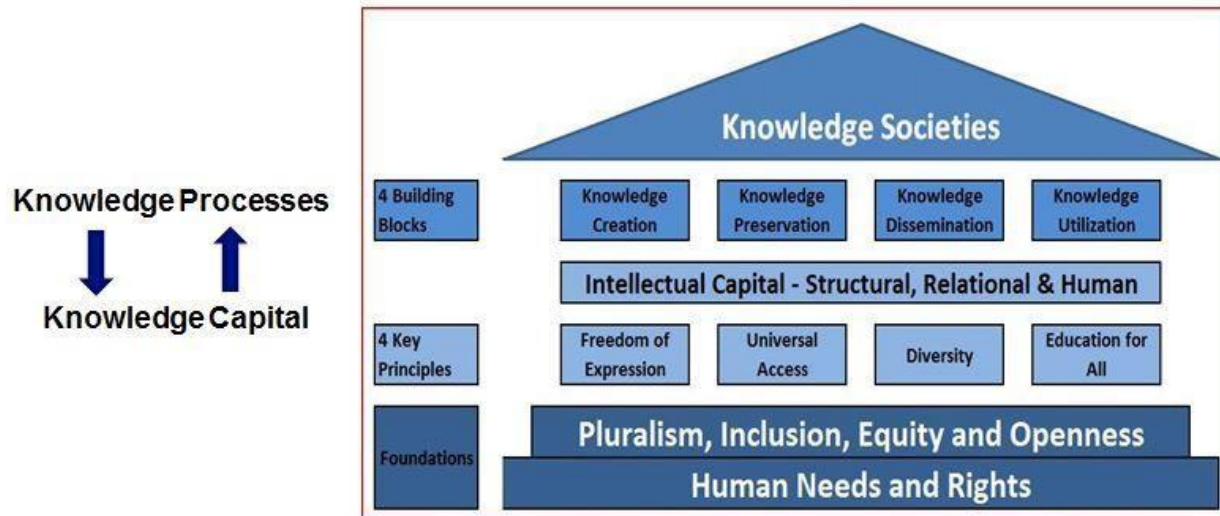


Figure 3: Modified UNESCO Knowledge Societies Conceptual Framework Incorporating Intellectual Capital Processes (Hector & Ermine, 2013)

Although Figure 2 shows the links with IC and KM, the relationship between knowledge-based interactions and their outcomes are not explicit. The role of tangible and other intangible assets which are essential to achieving the potential of individuals and societies are also hidden. The boundaries of the societies whose needs are to be met are also not defined, nor are there any indications of the strategic goals societies might aspire to or prioritize.

The following sections address these limitations.

Cities as an area of focus for UNESCO's knowledge societies conceptual framework

Urbanization is an important global demographic trend with more than 50% of the world's population living in urban centres today (Carrillo, 2005; UNDESA, 2012). Over the next 30 years the proportion of the world's population living in cities is expected to increase to around 70%. Everyday urban areas gain about 200,000 new inhabitants with about 90% of this increase taking place in the developing world, mainly Asia and Africa (UN-Habitat, 2014).

Cities are important drivers of social, cultural and economic growth and hubs of knowledge and innovation. They are also the key global links or contact points between nations. When cities do well, nations also do well. When things go wrong in cities – social unrest, natural or man-made disasters – the impacts can be felt nationally but also globally, as supply chains and other networks quickly transfer these effects.

Global mobility has increased the diversity of cities and with this increased human capital has come new opportunities for creativity, problem solving and value creation. But there are also new challenges around managing and making sense of this diversity of views and expressions and fostering understanding, positive engagement and interaction.

Opportunities for economic, social, political and other forms of participation are plentiful in cities, but there are significant inequalities in accessing these benefits. The inability to overcome deep-seated and persistent inequalities may lead to a break-down in social cohesion and various forms of insecurity that inhibit cities from reaching their full potential (Borja & Castells, 1997).

Given anticipated evolution in the development of the world's cities, they present an important strategic frontier and defined places for operationalizing UNESCO's Knowledge Societies concept. Cities in all countries face these challenges. The rapidness of urbanization in developing countries of Africa and Asia coupled with less research and resources (Jenkins, 2013, Roy, 2005) make these regions an appropriate focus for this study.

The UN's sustainable development goals as a strategic orientation

The identification of societal threats and goals is a strategic task that defines the purposes to which societies' direct their tangible and intangible resources. At the national, regional and global level and within the context of their membership in various regional and international bodies, nations agree on overarching priorities.

Given the model's origins it adopts the international development goals set by the United Nations as the strategic focus. The United Nations (2012) in its report "Realizing the future we want for all" identifies four overarching strategic areas for the Post-2015 Sustainable Development Agenda: inclusive social development, environmental sustainability, inclusive economic development, and peace and security (See Figure 4). These goals will complement and extend the Millennium Development Goals (MDGs) that were adopted in 2000 (UN, 2000).

A model for knowledge-based development

UNESCO's vision of knowledge societies is a knowledge-based approach to development that emphasizes ethical principles and approaches grounded in the observance of human rights.

To summarize, knowledge is the most important source of value creation. Knowledge societies, seek to satisfy the collective and individual social, economic and environmental needs (strategic goals) of their members in line with a set of ethical values and principles. To attain their strategic goals and address key challenges societies apply knowledge processes to their tangible and intangibles assets. The effectiveness of these efforts is a reflection of their knowledge maturity. The knowledge maturity is determined by their performance as measured against the principles and foundations defined in UNESCO's knowledge societies conceptual framework.

This knowledge based development model is presented in Figure 5 below. However, this Delphi study is limited to the exploration of indicators that contribute to knowledge maturity and the assessment of scenarios within the maturity model⁴.

Development/identification of knowledge maturity indicators

Through a review of the literature, indicators for the nine constructs in the Principles (freedom of expression, universal access, cultural & linguistic diversity, education for all) and the

⁴ The maturity model development process adopts a pragmatic design science research perspective and is guided by the methodological approaches of Brigg & Schwabe (2011); Hevner et al. (2004) and Mettler (2009).

Foundations (Human needs and rights, pluralism, inclusion, equity, openness) were identified. For each indicator, a specific qualitative measure (criteria) was then selected.

Table 1: The “Foundations” constructs in UNESCO's Knowledge Societies Conceptual Framework

Name of Construct	Definition	References in the Literature
Human Needs & Rights	These refer to the set of basic needs for survival and the guarantees of human dignity afforded under the international human rights law	De Beco, 2008; OHCHR, 2012; UN, 1948; UN, 2012
Pluralism	An energetic engagement with diversity and expressed through processes such as the active seeking and building of understanding across lines of difference, involving both criticism of another viewpoint & active self-criticism as well as reflection on one's own viewpoints.	Eck, 2006; Global Centre for Pluralism, 2012; UNESCO, 2000
Inclusion	The ability of an individual to fully exercise and claim the social, cultural, political and other rights afforded to them under the international and national laws.	De Beco, 2008; OHCHR, 2012; UNESCO, 2005
Equity	The belief that people's basic needs should be met consistently and adequately, that burdens and rewards should not be spread too unevenly across communities, and that policy should be applied impartially, fairly and justly to achieve these goals.	Beder, 2000; Clark, 2012; Dulal et al., 2009; Falk et al., 1993, UNESCO, 2005
Openness	A hybrid concept embodying three distinct aspects: transparency and participation in decisions that impact one's well-being; curiosity and willingness to venture outside one's frame of reference; and the use of open standards, collaboration and the sharing of knowledge assets	Downes, 2007; Educational Technology & Media Massive Open Online Course 2013; European commission, 2001; Gisselquist, 2012; Judge et al., 2013, Matthews et al., 2004; McCrae et al. 1992; UNESCO, 2005

Assessing knowledge maturity

In line with the focus on qualitative assessment, the performance on each indicator, that is to say its stage of maturity is assessed in relation to a predefined four-level scale. The levels of the scale which ranges from lowest to highest are labelled as Initial, Defined, Managed and Integrated. Each level considers performance on one or more aspects related to process, capability or outcome. Numerical values of 0 to 4 can be attributed to these levels allowing longitudinal benchmarking to be undertaken. Table 5 provides the definitions for these four levels.

In line with the definition for each level in the scale, scenarios for each indicator are developed at different levels of the proposed scale. The scenarios can provide guidance for areas where improvement can be made.

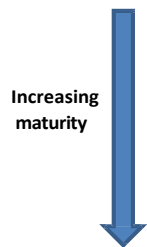
Application of the model involves semi-structured interviews of a purposefully selected representative of key stakeholder groups in the city. The interviews involve not only the perception of performance across the various levels but the underlying reasoning. The use of the narrative coupled with the attribution of numerical values allows both quantitative as well as qualitative analysis to be undertaken.

Table 2: "Key Principles" construct in UNESCO's Knowledge Societies Conceptual Framework

Construct	Definition	References in the Literature
Freedom of Expression	The right of every individual to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.	United Nations 1948
Universal Access	Equitable and affordable access by all citizens to information infrastructure (notably to the Internet) and to information and knowledge essential to collective and individual human development.	UNESCO 2003
Cultural Diversity	Culture takes diverse forms across time and space. This diversity is embodied in the uniqueness and plurality of the identities of the groups and societies making up humankind. As a source of exchange, innovation and creativity, cultural diversity is as necessary for humankind as biodiversity is for nature. It is the common heritage of humanity and should be recognized and affirmed for the benefit of present and future generations.	UNESCO 2001
Education for All	The Provision of quality basic education for all children, youth and adults to provide the foundation and skills to effectively navigate social changes and to equip citizens with the skill needed for learning to learn and to fully participate in their societies.	United Nations 1948, UNESCO 1990

Table 3: Stages of maturity in the model and their features

Maturity Levels		Features
1	Initial	Characterized by adhoc responses; limited human and institutional capabilities to plan, develop and implement policies; top-down decision-making.
2	Defined	Need for policies, processes and human-capacity recognized and are but resource constraints lack of human and institutional capacity challenges and systems. Still dependent on external resources.
3	Managed	Enabling environment supported by adequate processes, policies, human and institutional capacity as well as resurces. Seeking to find and adapt best practices. Capabilities for medium term planning
4	Integrated	Recognized as best in class in one or more areas by other cities. Policies, process supported by institutional capacities, capable of long range planning and setting stretch goals.



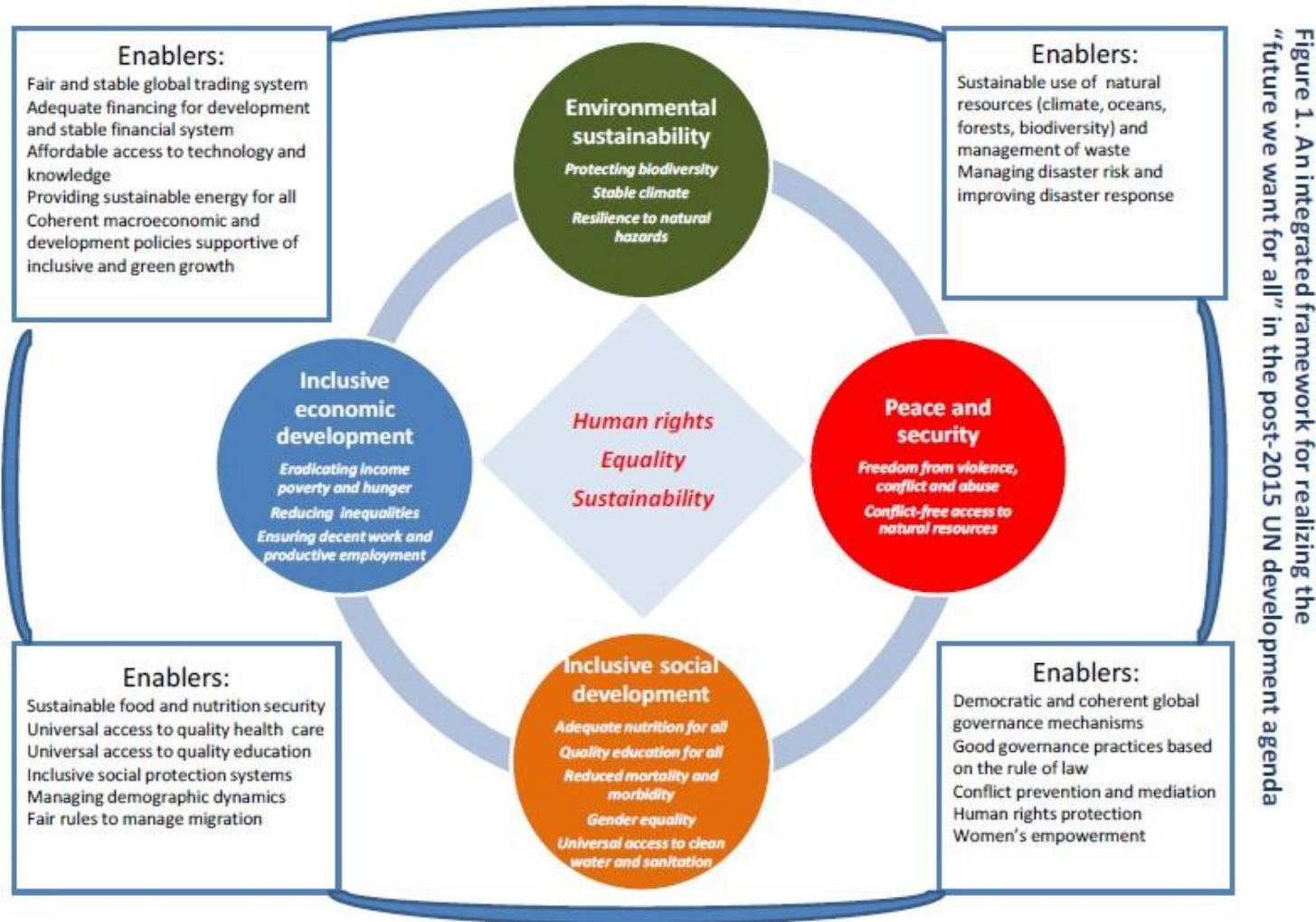


Figure 4: Proposals for the Post-2015 Development Agenda (United Nations System Task Team on the Post-2015 UN Development Agenda, 2012)

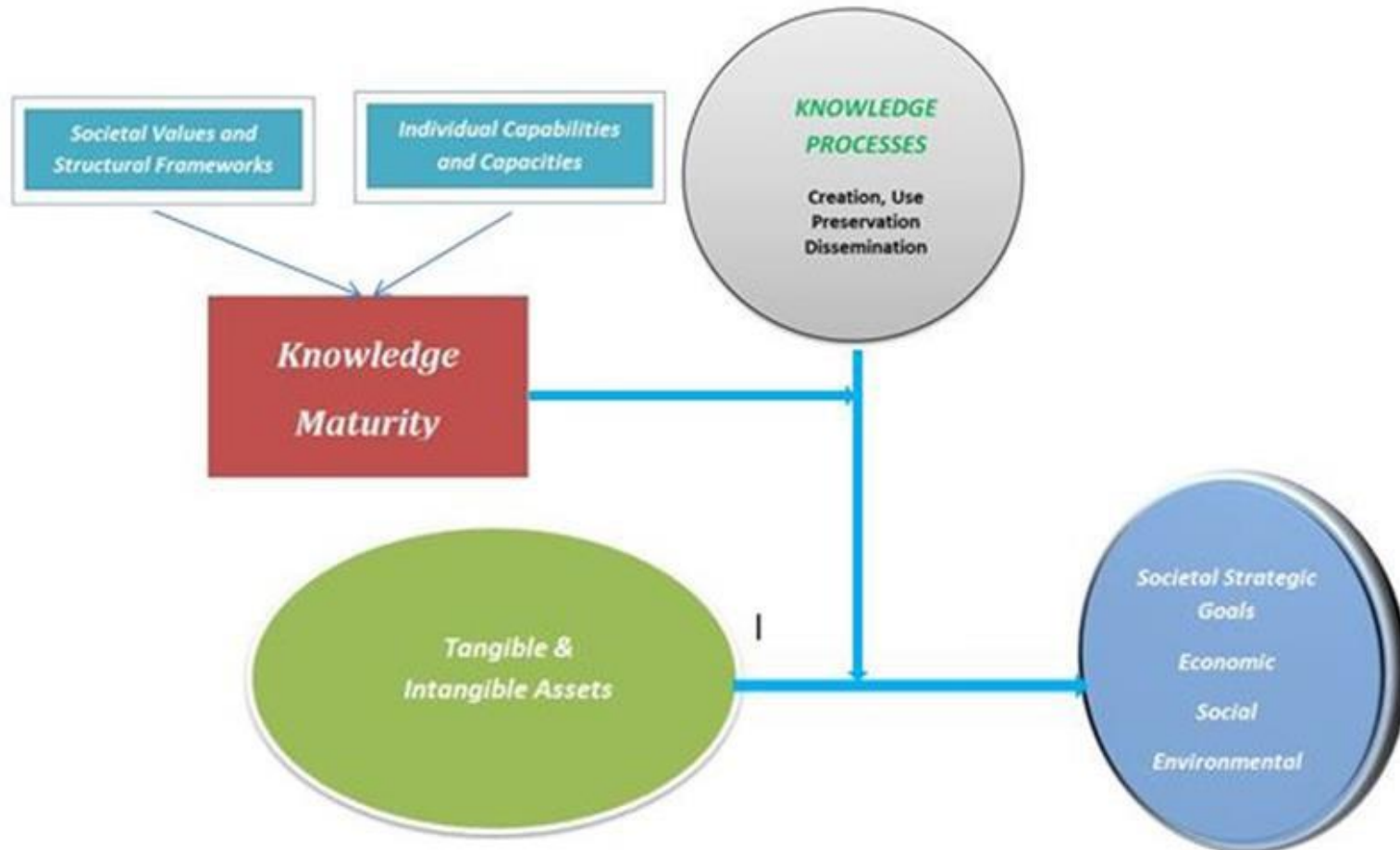


Figure 5: Knowledge-based development model for societies

Table 4: “Foundation” (societal values and frameworks) constructs in the knowledge city maturity model and their contribution to intangible knowledge based development from the literature

Dimension	Claims based on the literature	References from the literature
Human needs and rights	Respect for human rights establishes societal norms that promote social cohesion, provide ethical and value frameworks that inform governance processes and which shape societal choice making and strategic direction in conformity with international law thereby enhancing predictability. In this regard accountability, awareness, non-discrimination, participation and structural measures play key supporting roles. Enhances the creation and development of social, human and structural capital.	De Beco (2008); Naval et al., (2008); United Nations Human Rights Committee (2011, 2013); UNESCO 2005; United Nations Office of the High Commissioner for Human Rights (2012).
Pluralism	Enabling social diversity to become a social good through active interventions across political social, economic and educational systems ensures the rights and place for all citizens and creates social cohesion. In today’s globalized heterogeneous societies pluralism is central to sustainable growth and development and the creation of social capital.	Arizpe et al. (2000); Eck (2006); Organization for Economic Cooperation and Development (2014); Ritzen et al. (2000); UNESCO (2005); Zapata-Barrero & Triandafyllidou (2012).
Inclusion	Allowing segments of their population to remain impoverished, un-empowered and uninvolved in civic/social life prevents a society from leveraging and benefitting from the full breadth of its human capital. This represents a high opportunity cost and may also trigger social instability and unrest. Enhances the development of human, social and structural capital.	Atkinson et al. (2011); Bhalla and Lapeyre (1997); EuroStat (2014); Gandelman, (2011); International Labor Organization (2012); Justino and Litchfield (2005); Klugman (2005); Robinson (2008); Sen (1999); UNESCO (2005); US Census Bureau (2014); World Bank (2013).
Equity	The ability for all members of a society to access economic opportunity, to be fairly treated with regards to the proportion of societal costs and rewards they bear and to be able to consistently access quality social services – e.g. health and education – are good predictors for performance across a range of economic and non-economic measures. Equity also implies the development of measures to enable/advocate for vulnerable groups. Enhances social, human and structural capital.	Beder (2000); Clark (2012); Dulal et al. (2009); Falk et al. (1993); OECD (2012); Stiglitz (2012); UNESCO (2005).
Openness	Openness contributes to improved decision-making, creativity and innovation by broadening participation of citizens in decision-making, providing access to a greater ideation pool and supports creation and access to knowledge-based goods, services and infrastructure at a lower average cost. Enhances social, human and structural capital.	Bissell (2009); Bissell & Boyle (2013); Bugaric (2004); De Dreu et al. (2006); Downes (2007); European Commission (2001); Gisselquist (2012); Goncalo et al. (2009); Judge et al. (2013); Keith (2012); Matthews et al. (2004); McCrae et al. (1992); Saroglou (2002); Sibley and Duckitt (2008); UNESCO (2005).

Table 5: “Key Principles” (Individual capabilities and capacities) constructs in the knowledge city maturity model and their contribution to knowledge based development from the literature

Dimension	Claims based on the literature	References from the literature
Freedom of expression	A climate that fosters the public dissemination of diverse viewpoints, their interrogation, comparison, validation, absorption and remixing to create new ideas and knowledge is fundamental to the development of knowledge societies and economies. Enhances social and relational capital.	Banerjee and Seneviratne (2005); Peters (2010); Starr (2009); Trappel and Maniglo (2009); OHCHR (2012); UNESCO (2005, 2010); UNESCO and WRTC (2001); Valcke (2009).
Universal access to information and knowledge	Promoting universal access to information and knowledge provides a competitive advantage, enhances efficiency, effectiveness, participation and socio-economic well-being. Effective transport infrastructure for movement of people, goods and services; access to local and global digital communications as well the requisite skills are crucial. Enhances social, human and structural capital.	Abdelghaffar & Elmessiry (2012); Ayanso et al. (2011); Azmi and Karim (2012); Bhatia (2001); Biao et al. (2013); Borja & Castells (1997); Campbell (2001); Castells (1989); Delbosc and Currie (2011); Frank (2006); Gray et al. (2006); Jenkins (2013); Hine and Mitchell (2003); Lamont et al. (2013); Lu (2001); Lucas (2004); Mees (2010); Schlichter & Danylchenko (2014); Sietchiping et al. (2012); UNESCO (2005); United Nations Program for Human Settlements (2009).
Cultural and linguistic diversity	Fostering cultural and linguistic diversity provides a means for reaffirming the cultural identity and self-worth of all citizens. It supports the transfer of local knowledge vital for survival – which may not yet be known to the scientific community. Linguistic diversity can support the cross-fertilization of ideas leading to creativity and innovation. Cultural expressions can be leverage to advancing the city’s socio-economic well-being and vitality. Enhances social and human capital.	Burri (2013); Clements (2006); Hill (2004); Johnstone (2002); Lønsmann (2014); Looseley (2004); Marschan-Piekkari et al. (2009); Moreau & Peltier (2004); Pyykkönen (2012); Skutnab-Kangas (2002); Stirling (1998); Stock (2011); UNESCO (2003; 2005); Vromen (1992).
Education for all	Human capital is the key to success – economic, social, and environmental – in knowledge societies. Cities which are best able to develop, attract, retain human capital and equip them with the skills and attitudes to effectively participate as global citizens in the glocal world are likely to do better in solving their problems, setting and achieving development targets. Enhances social, human and structural capital.	Arizpe et al. (2000); Blaug (1976); Bennet & Bennet (2007); Bok (229); Bounfour & Edvinsson (2005); Činčikaitė & Paliulis (2013); Dickmann (2012); Dijk (2006); Edvinsson & Malone (1997); Florida (2002); Gamerschlag (2013); Gillies (2011); Keeley (2007); Iisi & Biondo (2013); Malik et al. (2014); Ng et al. (2007); OECD (2005); Parkinson (2004); Scott (2008); Singhal et al. (2013); Sousa & Bradley (2006); Stiglitz (2012); Tharenou (2003); Tyson (2011); UNESCO (2005); World Bank (199); Yigitcanlar et al. (2007); Yigitcanlar & Lönnqvist (2013); Yitmen (2013).

From the desk of Mr. Paul G. C. Hector

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Institute for Knowledge and Innovation South-East Asia, Bangkok University
Building 9, 9th floor, Bangkok University, Rama 4 Rd., Klong-Toey, Bangkok, Thailand 10110

2015 – 04 - 26

Dear Madam/ Sir,

Subject: Additional information concerning the Delphi panel

Thank you for having completed the registration process! This short note provides some additional information about the study.

What is a Delphi study?

A Delphi study provides a structured approach to combining the knowledge and insights of individual experts to develop a more complete and shared understanding of a complex issue. It involves presenting a series of questions to a panel comprised of the participating experts. At the end of each round of questions, the responses are summarized and presented to the panelists who may then revise and update their response in light of the emerging perspectives insights and ideas that are triggered. Throughout the process, anonymity of the experts and their responses is maintained. A Delphi study is thus an iterative method for combining individual opinions into group consensus and creating new knowledge.

What is a maturity model?

A maturity model is a set of hierarchical stages that enable the description, definition and assessment of competence on one or more selected attributes. A maturity model provides a series of stages along a path to a final desirable state of competence, that is to say it tracks or assesses maturity of a given attribute. The various stages of competence and their characteristics may be based on experience, logic, definitions or a theory.

What does participation in this study involve?

As a Delphi panelist you will participate in up to four (4) rounds of surveys as part of a group of 25 international experts. Each survey will be open for a **maximum of 10 days** or until all panelists have submitted their responses. Following the end of each survey or I will compile and analyze the

Page 1 of 2

: PhD research project by Paul Hector.

You may send comments or suggestions to me at - paul.hector@telecom-em.eu

results and then return to you after 1 week a report on the outcomes of the round. A new survey round will then commence during which you may update your earlier inputs taking into account the insights and knowledge of your fellow panelists. This process will continue until consensus is reached or 4 rounds have been completed.

The first survey will be launched on **Monday 11th May** and you will receive an e-mail invitation to the survey.

What is required from each panelist?

This study will be conducted in English. All participating experts should commit to participating in up to four rounds of the study.

Who is conducting this research?

This study is being undertaken within the framework of my doctoral research, which is conducted under the supervision of Dr. Jean-Louis Ermine of the Telecom Ecole de Management in France (<http://www.telecom-em.eu/>), Dr. Vincent Ribiere and Dr. Alex Bennet of the Institute of Knowledge and Innovation - South East Asia (IKI-SEA) at Bangkok University in Thailand (<http://www.iki-sea.org/> and <http://phdkim.bu.ac.th/>).

Confidentiality

All survey responses will be collated anonymously. All responses received in the study will be kept confidential, and your identity will not be divulged to other panellists. A synthesis or direct quote from your responses may be used as part of my feedback in the end of round reports, or in future academic publications. However, under no circumstance will a response be attributed to you unless I request and you grant me permission to do so.

What are the next steps?

To reduce the time that you will need to complete the survey to an absolute minimum, a background information sheet and a Powerpoint with information on my research will be sent to you. Please review the information in the background sheet when you receive it and before starting the first survey.

Do you have additional questions or comments?

Any questions or comments should be sent to: paul.hector@telecom-em.eu

Once again thank you very much for your participation!

With my best regards,

Paul

LIST OF INTERNATIONAL EXPERTS PRE-QUALIFIED AND VOLUNTEERING TO PARTICIPATE IN THE DELPHI PANEL

ID No.	First Name:	Family Name	Gender	Country of residence	Employment status	Sector(s) in which employed	Current job-title(s)	Level in your Organization	Primary professional role(s)	Fields of expertise	Lived in developing Africa /Asia countries in last 10 yrs	If yes which ones?	Professional activity in developing Asia Africa past 10 yrs	Which ones?	Highest academic qualificat.	Age Group (Years)	Publications edited or reviewed	Publications authored	Years of professional experience
1	Jay	Chatzkel	Male	USA	Employed	4, 5	Principal, Progressive Practices	1	1, 2, 4	1, 5, 7, 8, 9, 10	No		No		M.A / MSc.	65 – 79	1, 2, 3, 4, 6	1, 2, 3, 4, 6	15 - 19
2	Alex	Bennet	Female	USA	Independent Researcher/ Professor	8	Co-Founder and Director, Mountain Quest Institute	1	1, 4	2, 7, 9	No		Yes	In Asia, Thailand, South America, Ecuador and	PhD	65 – 79	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5, 6, 7	> 40
3	Michael	Sutton	Male	USA	Employed	8	Assoc. Professor, Management & Marketing Division	2	1, 2, 3, 4	2, 4, 5, 7, 8, 9, 11	No		No		PhD	50 – 64	1, 2, 3, 4, 5	1, 2, 3, 4, 5, 6, 7	> 40
4	Edna	Pasher	Female	Israel	Employed	3, 4, 5, 8	CEO	1	1	1, 2, 4, 5, 6, 7, 8, 9, 10	No		Yes	India, China	PhD	65 – 79	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	> 40
5	Patrizia	Ingallina	Female	France	Academic	8	Prof. Geography & Urban Planning, University of Paris Sorbonne	1	1, 4, 5	1, 7, 8, 11	No		Yes	I teach in PSUAD -Paris Sorbonne Abu Dhabi. I collaborated with	PhD	50 – 64	1, 3	1, 2, 3, 4, 5	25 - 29
6	Paul	Carlson	Male	USA	Employed	1	Project Manager	2	1, 2, 3, 4	10	No		No		M.A / MSc.	50 – 64	5	5	30 - 34
7	Abdul	Khan	Male	Canada	Employed	5	Director General, EDTRIN	1	1	2, 4, 6, 7	Yes	India	Yes	India, Bangladesh, Indonesia, Sri	PhD	65 – 79	1, 3, 4, 5	3, 4, 5, 7	35 - 39
8	Ravi	Sharma	Male	Singapore	Employed	8	International Knowledge Management & Self employed consultant, teacher & researcher	2	4	4, 5, 7, 8, 9, 10	Yes	Malaysia &	Yes	Most ASEAN countries and India	PhD	50 – 64	1, 2, 3, 4	1, 2, 3, 4, 5, 6, 8	25 - 29
9	Johan	Arvling	Male	Thailand	Consultant	2, 4, 5, 8		1	1, 2, 3	4, 7, 8, 9	Yes	India > 60 countries since 1993:	Yes		Post Graduate Certificate / Diploma	35 – 49	4, 6, 7	3, 4, 5, 6, 7	20 – 24
10	Larry	Prusak	Male	USA	self employed	2, 7, 8		1	4	1, 5, 7, 9	No		Yes	South Africa, Fiji, India, Malaysia	PhD	65 – 79	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5, 6, 7	30 - 34
11	Tan	Yigitcanlar	Male	Australia	Employed	8	Professor	1	1	4, 6, 7, 8, 10	No		Yes	Undertook research on Turkey, Malaysia,	PhD	35 – 49	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5, 6, 7	25 - 29
12	Ana Cristina	Fachinelli	Female	Brazil	Employed	8	Professor	2	1, 4	1, 5, 7, 8, 9	No		No		PhD	35 – 49	1, 2, 5	1, 2, 4, 5, 6	20 – 24
13	Jaco	Du Toit	Male	Kenya	Employed	2	Doctor Communication &	2	Tactical: Leading the implementation of processes	2, 3, 4	Yes	Namibia	Yes	Angola, Comoros, Djibouti, Kenya, several -	M.A / MSc.	35 – 49	3, 6, 7	5, 7	15 - 19
14	Alex	Gakuru	Male	Kenya	Employer	1, 6, 7, 8	Information Adviser Executive Director, CODE-IP Trust Regional	1	1, 2, 3, 4	1, 2, 3, 4, 5, 6, 7, 8, 9	Yes	Kenya Lived in Kenya all of my life and	Yes		B.A. / BSc.	35 – 49	5, 6, 7	5, 6, 7	20 – 24
15	OCTAVIO	GONZALEZ AGUILAR	Male	MEXICO	Employed	4	Business Intelligence & Data Mining Analyst	2	4	4, 5, 7, 9	No		No		M.A / MSc.	20 – 34	NOT YET	1, 2, 3, 4	5 - 9
16	Stephen	Donkor	Male	Ghana	Retired	2, 3, 7, 8	Executive Secretary, Interim Guinea Current	1	1, 2, 3, 4	2, 6, 7, 10	Yes	Ghana, Ethiopia. South	Yes	Ghana, Ethiopia, South Sudan , DR Congo , Gulf	PhD	50 – 64	1, 2, 4, 5, 7	1, 2, 4, 5, 7	35 - 39
17	marton	kocsev	Male	Germany	Employed	2	Advisor	2	3	4, 6, 8	Yes	Ethiopia	Yes	Ethiopia, Rwanda, Kenya, Indonesia	M.A / MSc.	20 – 34	1, 5, 6, 7	5, 6, 7	5 - 9

ID No.	First Name:	Family Name	Gender	Country of residence	Employment status	Sector(s) in which employed	Current job-title(s)	Level in your Organization	Primary professional role(s)	Fields of expertise	Lived in developing Africa /Asia countries in last 10 yrs	If yes which ones?	Professional activity in developing Asia Africa past 10 yrs	Which ones?	Highest academic qualificat.	Age Group (Years)	Publications edited or reviewed	Publications authored	Years of professional experience
18	Amouzou	Bedi	Male	Austria	Employed	4	Business Applications Manager	2	4	1, 2, 4, 7, 9	No		No		M.A / MSc.	35 – 49	4	4	5 - 9
19	Phyza	Jameel	Female	Iraq	Employed	7		2	1, 2, 3, 4	1, 2, 4, 9	No		Yes	Pakistan, Iraq	M.A / MSc.	35 – 49	1, 2, 4, 5, 6, 7	1, 5, 6, 7	15 - 19
20	Dave	Snowden	Male	UK	Employed	8	Director	1	1	1, 7, 9	No		No		M.A / MSc.	50 – 64	1	1, 4	35 - 39
21	Árpád	Rab	Male	Hungary	Employed	8	Senior researcher, project leader. Special advisor	1	1, 4	1, 2, 6, 8	No		No		M.A / MSc.	35 – 49	4, 5	1, 2, 4, 5, 6,	15 - 19
22	Tine	Munch Pedersen	Female	Denmark	Employed	1		3	1, 3, 4	3, 8, 11	No		No		Post Graduate Certificate / Diploma	35 – 49	6, 7	6, 7	5 - 9
23	Peter	Schiøler	Male	Norway	Employed	7	Knowledge Technology Adviser NRC's Expert	2	2, 3, 4	4, 5, 6, 8, 9, 11	No		Yes	Large number of countries in Asia & Africa and	M.A / MSc.	35 – 49	3, 4, 6	4, 6	2 5 - 29
24	Gladys	Muhunyo	Female	Kenya	Employed	4	Director of Strategy & Business Development	1	1, 2, 3, 4	4, 11	Yes	Kenya	Yes	Kenya, Uganda, Tanzania, Rwanda,	M.A / MSc.	35 – 49	2	1, 5	20 – 2 4
25	Helena	Azeredo	Female	Portugal	Employed	4	Técnico Superior - Assessor	2	3	4, 8	No		No		B.A. / BSc.	35 – 49	none	5	15 - 19
26	Johanna	Awotwi	Female	Ghana	Non-Profit ICT Research Director	4	ICT Operations & Research Director	1	4	4	Yes	Ghana	Yes	Ghana	B.A. / BSc.	50 – 64	2, 3	2, 4	2 5 - 29
27	Nnenna	Nwakanma	Female	Côte d'Ivoire	Employed	2, 3, 6, 8	Africa Regional Coordinator	1	2	1, 2, 3, 4, 6, 7, 9	Yes	Nigeria, Ghana , Côte d'Ivoire	Yes	Too many to mention	M.A / MSc.	35 – 49	4, 5, 6, 7	3, 6, 7	15 - 19
28	Kent	Greenes	Male	USA	Employed	1, 5, 7, 8	Consultant & Founder/President of Greenes	1	1, 2, 3, 4	1, 2, 4, 5, 7, 8, 9	No		Yes	Botswana Malaysia Singapore South	M.A / MSc.	50 – 64	1, 2, 3, 4, 5, 6	2, 4, 5, 6	30 - 34
29	Hank	Kune	Male	The Netherlands	Self-employed	5, 9	Director	1	1, 4	5, 6, 7, 8, 9, 11	No		No	Republic of South Africa	M.A / MSc.	65 – 79	3, 4, 5	3, 4, 5, 6,	30 - 34
30	John	Rose	Male	France	Retired	2	Programme Specialist, Knowledge	2	2	1,2, 3, 4, 5, 6, 7, 8, 9, 10		India	Yes	India, Senegal	PhD	65 – 79	N/A	1, 2, 5, 6	30 - 34
31	Surinder	Batra	Male	India	Employed	8	Professor	2	4, 5	2, 4, 5, 7, 8, 9, 10	Yes	India	Yes	India	PhD	50 – 64	1, 2	1, 2, 3, 4, 6	> 40
32	Fisseha	Alazar	Male	Ethiopia	Freelancer	3	Consultant	2	1	1, 3, 6	Yes	Ethiopia	Yes	Ethiopia	Post Graduate Certificate / Diploma	35 – 49	2, 3	2, 4	15 - 19
33	Florence	Ssereo	Female	France	Employed	2	Education Program Specialist, UNESCO	2	3	2, 6, 11	Yes	Uganda, Ethiopia, United Republic of Tanzania	Yes	Burkina Faso, Comoros, Djibouti, Ethiopia, Ghana, Mauritius, Nigeria, Niger,	PhD	50 – 64	3, 5, 7	3, 5, 7	20 – 2 4
34	Anna	Sidorenko	Female	France	Employed	2	Programme Specialist, UNESCO World Heritage Centre	2	3	1, 10, 11	No		No		Post Graduate Certificate / Diploma	35 – 49	2, 5	2, 4, 5, 6	15 - 19

ID No.	First Name:	Family Name	Gender	Country of residence	Employment status	Sector(s) in which employed	Current job-title(s)	Level in your Organization	Primary professional role(s)	Fields of expertise	Lived in developing Africa /Asia countries in last 10 yrs	If yes which ones?	Professional activity in developing Asia Africa past 10 yrs	Which ones?	Hghest academic qualificat.	Age Group (Years)	Publications edited or reviewed	Publications authored	Years of professional experience
35	Marjan	Modara	Female	Bahrain	Unemployed	5	Chief Technical Officer	1	2	9	Yes	Bahrain	No		undergoing PhD	50 – 64	none	none	2 5 - 29
36	Claudio	Menezes	Male	Brazil	Employed	8	Assistant Professor	1	4	4, 8	No		No		M.A / MSc.	65 – 79	1, 2	2	> 40
37	Zachary	Mosoti	Male	Kenya	Employed	8	Asst. Professor	2	2, 4	1, 2, 3, 7, 9, 10	Yes	Kenya	Yes	Kenya	PhD	50 – 64	1, 2, 5	1, 2	20 – 2 4
38	Paul	Dominick Mushi	Male	Tanzania	Employed	1, 8	University Senior Lecturer	1	1	2, 3, 4, 10	Yes	Tanzania	Yes	Almost all African countries - Mapping	PhD	50 – 64	1, 5, 7	1, 3, 4, 5	2 5 - 29
39	Francisco	Carrillo	Male	Mexico	Employed	7, 8	Head, Strategic Research Group on Knowledge Societies, Tecnologico de Monterrey, Mexico - President, World Capital Institute	1	1, 4	1, 2, 5, 7, 8, 9	No		No		PhD	50 – 64	1, 2, 3, 4, 5, 7	1, 2, 3, 4, 5, 6, 7	> 40
40	Guenther	KOCH	Male	Austria	self employed	3, 7, 8	President Association "Humboldt Cosmos Multiversity" prev.: - CEO of Austrian Institute of Technology - Mng. Director European	1	1, 2	1, 5, 6, 7, 8, 9	No		Yes	Malaysia	Post Graduate Certificate / Diploma	65 – 79	1, 2, 3, 4, 5, 7	1, 3, 4, 5, 7	35 - 39
41	Grace	Githaiga	Female	Kenya	Cosultant	6, 8	Policy Associate	1	2, 3	3, 4	Yes	Kenya	Yes		Post Graduate Certificate / Diploma	35 – 49	1	1, 4	20 – 2 4
42	Andreas	Brandner	Male	Austria	self-employed	1, 2, 3, 4, 5, 6, 7, 8	Managing Director	1	1, 2, 3, 4	5, 6, 7, 8, 9	No		No		PhD	35 – 49	3	3, 4, 5, 6, 7	15 - 19
43	Ben	Akoh	Male	Canada	Self-employed	4, 8	Director	1	1, 2, 3, 4	1, 2, 3, 4, 6, 7, 9	Yes	Senegal	Yes	All of West Africa	M.A / MSc.	35 – 49	1, 5	1, 2, 3, 4, 5, 6, 7	15 - 19
44	Claudia	Wanderley	Female	Brazil	Employed	8	Research Center for Logic, Epistemology & History of Science, UNESCO Chair Multilingualism in Digital World: Programme	2	5	2, 4, 6, 7, 8, 9	No		Yes	Sub-Saharan countries with a network on multilingualism and multiculturalism.	PhD	35 – 49	1, 2, 3, 4, 5	1, 2, 3, 4, 5,	2 5 - 29
45	Magda	Berhe Johnson	Female	Sweden	Employed	6, 8		2	1, 2	2, 3, 4, 10	No		Yes	Namibia, Rwanda, Zambia IST Africa 2008. I spoke at the conference. China, Japan, Taiwan	M.A / MSc.	35 – 49	7	5, 7	5 - 9
46	Klaus R.	Kunzmann	Male	Germany	Retired	8, 9	Manager in ICT4D. Full professor	1	1, 2, 3, 4	1, 2, 7, 8, 10	No	Not "lived", worked in China, Taiwan & Japan	Yes		PhD	65 – 79	1, 2, 3, 4	1, 2, 3, 4, 5, 6, 7	> 40

ID No.	First Name:	Family Name	Gender	Country of residence	Employment status	Sector(s) in which employed	Current job-title(s)	Level in your Organization	Primary professional role(s)	Fields of expertise	Lived in developing Africa /Asia countries in last 10 yrs	If yes which ones?	Professional activity in developing Asia Africa past 10 yrs	Which ones?	Hghest academic qualificat.	Age Group (Years)	Publications edited or reviewed	Publications authored	Years of professional experience
47	Johann	GÜNTHER	Male	Austria	Employed	8	Prof. Dr. Research Professorship	2	3	2, 4	No		No		PhD	65 – 79	3, 4, 5, 6, 7	1, 2, 4, 5,	35 - 39
48	Neil	Butcher	Male	South Africa	Employed	4	Director, Neil Butcher & Associates Managing Consultant	1	1, 2, 3,	2, 4, 5, 6, 9	Yes	South Africa	Yes	Kenya, Uganda, Antigua & Barbuda, Indonesia, India, Fiji, Ghana, and	M.A / MSc.	35 – 49	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5, 6, 7	20 – 2 4
49	Michael	Canares	Male	Philippines	Employed	4	Internet Governance and Law expert	1	1, 2	2, 4, 6, 10	Yes	Philippines Thailand	Yes	Philippines, Indonesia, Cambodia,	M.A / MSc.	35 – 49	1, 3, 5	1, 2, 3, 4, 5, 7	15 - 19
50	Emily	Taylor	Female	United Kingdom	Self-employed	4	OIC-Dean	1	1, 4	4, 11	No		No		MBA, UK Lawyers qualification s (CPE, PSC)	35 – 49	N/A	1, 5	15 - 19
51	Dave	Marcial	Male	Philippines	Employed	8	Professor	2	1, 2, 3, 4	2, 4, 7, 8, 9	Yes	Philippines	Yes	Indonesia, Hongkong, Japan, Cambodia, Singapore, Thailand, Brunie,	PhD	35 – 49	1, 2	1, 2, 4	10 - 14
52	overson	shumba	Male	zambia	Employed	8	Associate Professor	2	1, 2, 3, 4	2, 5, 7, 8, 9	Yes	Zambia Zimbabwe	Yes		PhD	50 – 64	1, 3, 5	1, 2, 3, 4, 5	30 - 34
53	Honoratha	Mushi	Female	Tanzania	Employed	8	in education Assistant	2	5	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	Yes	Tanzania & working experience in some Sub-Saharan countries	Yes	Tanzania - Have taught and managed at the Open University of Tanzania Served as an	PhD	50 – 64	1, 2, 3, 4, 5, 7, 8	1, 2, 3, 4, 5, 7, 8	30 - 34
54	Blanca	Garcia	Female	Mexico	Employed	8	Professor/Researcher	1	5	2, 7, 10	No		No		PhD	35 – 49	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	2 5 - 29
55	Edna	Soomre	Female	Sweden	Employed	1, 8	Project Coordinator	2	1, 3	2, 3, 4, 6, 7, 9, 10	No		Yes	Uganda, Kenya, Tanzania, Ghana	M.A / MSc.	20 – 34	5, 7	5, 6, 7	15 - 19
56	Ama	Dadson	Female	Ghana	Employed	8	IT Service Delivery Manager	1	1, 3, 4	1, 2, 4, 7, 8, 9	Yes	Ghana	Yes		B.A. / BSc.	50 – 64	5, 7	5	2 5 - 29
57	Eibhlin	Ni Chleirigh	Female	Ghana	Employed	6	Manager: Knowledge & Collaboration systems Director	2	1	1, 2, 3, 4, 7, 8, 9	Yes	Ghana	Yes	Ghana, Guinea (Conakry), Mali, Tanzania, Namibia, DRC, Senegal	M.A / MSc.	50 – 64	1, 2 , 5, 7	2, 5	30 - 34
58	Larry	Wilson	Male	United States	Employed	1, 2, 3,4,5,6,7,8		1	1, 2, 4	4, 5, 7, 9	No		No		M.A / MSc.		1, 3, 4, 6, 7	1, 2, 4, 5, 6, 7	2 5 - 29

ID No.	First Name:	Family Name	Gender	Country of residence	Employment status	Sector(s) in which employed	Current job-title(s)	Level in your Organization	Primary professional role(s)	Fields of expertise	Lived in developing Africa /Asia countries in last 10 yrs	If yes which ones?	Professional activity in developing Asia Africa past 10 yrs	Which ones?	Hghest academic qualificat.	Age Group (Years)	Publications edited or reviewed	Publications authored	Years of professional experience
59	Mohamed	El Sioufi	Male	Canada	Self Employed ex UN Official	4, 8,9	Urban Development Advisor, 150th Jubilee Professor at Chalmers Technical University, Gothenburg, Sweden Assistant Professor	1	1, 2,4	3, 6, 8, 9, 10	Yes	As the Coordinator of the Housing and Slum Upgrading Branch in UN Habitat, I lived Kenya for 9 years until August of 2014.	Yes	Afghanistan, Algeria, Burkina Faso, China, DRC, Cote d'Ivoire, Egypt, Ethiopia, Ghana, Indonesia, Iran, Jordan, Kenya, Lebanon, Liberia, Libya, Malawi, Mali, Malaysia, Mauritius	PhD	50 – 64	5, 7	1, 5, 7	> 40
60	Claudio	Menezes	Male	Brazil	Employed	8		2	5	2, 4, 8, 9	No		No		M.A / MSc.	65 – 79	2, 3	4, 7	> 40
61	Eunice	Smith	Female	China	Employed	3		2	2	1, 2, 3, 6, 10	Yes	South Sudan China	Yes	Tunisia, Palestine, South Sudan, Ethiopia, Kenya, South Africa, DRC, Vietnam,	Post Graduate Certificate / Diploma	35 – 49	2, 3, 4, 5	3, 4, 5	15 - 19
62	Anup Kumar	Das	Male	India	Employed	1, 8	Documentation Officer (Information Specialist)	2	1, 2, 3, 4	4, 5, 7, 8, 9	Yes	India	Yes	India	PhD	35 – 49	1, 3	1, 2, 3, 4, 5, 6, 7, 8	10 - 14
63	§	§	Male	Canada	Employed	2	Education Specialist, eLearning	2	1, 2, 3, 4	2, 4, 9	Yes	India	Yes	India, Kenya, Bangladesh, Sri Lanka, Pakistan, Malaysia, South Africa, Mali	PhD	35 – 49	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5, 6, 7	20 – 2 4

KEY

* Sectors: 1 - National Public Sector; 2- Intergovernmental Organization; 3 - International bilateral/multilateral; 4 - National Private Sector; 5 - International/Multinational Private Sector; 6 - National NGO or Civil Society; 7 - International NGO or International Civil Society; 8 - Academic/Research institution; 9 - Other.

Level in Organization: 1 - Upper Management (e.g. Director, CEO); 2 - Middle Managment / Technical Expert; 3 - Junior / Entry level Professional; 4 - Other.

* Professional role (primary): 1 - Strategic; 2 - Managerial; 3 - Tactical; 4 - Advisory; 5 - Other.

* Publications edited or reviewed: 1 - Peer-reviewed Journals; 2 - Peer-reviewed Conference Proceedings; 3 - Books; 4 - Book chapters; 5 - Policy reports, white papers, advisories; 6 - Practitioner-focused magazines; 7 - Policy briefs or advisories; 8 - Other.

* Publications authored: 1 - Peer-reviewed Journals; 2 - Peer-reviewed Conference Proceedings; 3 - Books; 4 - Book chapters; 5 - Policy reports, white papers, advisories; 6 - Practitioner-focused magazines; 7 - Policy briefs or advisories; 8 - Other.

* Fields of expertise: 1 - Culture for social & economic development; 2 - Education for development; 3 - Human rights; 4 - ICT for Development; 5 - Intellectual Capital; 6 - International, regional, national development; 7 - Knowledge-based development; 8 - creative / digital / knowledge / intelligent / resilient / smart / sustainable / wired cities; 9 - Knowledge manangement 10 - Sustainable urban & regional development; 11 – Other

§ Identity not disclosed at request of respondent.

DELPHI QUESTIONNAIRES

Round 1 Questionnaire

Delphi Study - Validating a Knowledge City Maturity Model

1. Welcome and Overview

Welcome to this Delphi Study on knowledge-based development which seeks to make UNESCO's Knowledge Societies Conceptual Framework measurable and operational in cities of the developing world.

Knowledge-based strategies are a critical element in the toolkit of responses that enable societies to achieve sustainable development. However, societies face conceptual and empirical difficulties in identifying and creating conditions for effectively harnessing and leveraging their knowledge assets (Bresnahan & Gambardell, 2004; Sharma et al., 2013; Yigitcanlar et al., 2012; Yigitcanlar & Lönnqvist, 2013).

This study seeks to overcome these challenges by validating a knowledge city maturity model that can inform the responses of policy-makers and other stakeholders in cities of developing countries.

Statistical capabilities in developing countries are often limited, so the model seeks to adapt itself to this context by focusing on qualitative measures (Atiqul Haq, 2012; UNDESA, 2012; UN-Habitat, 2014).

**** Your responses are automatically saved, use the back and forward buttons to go between pages****

**** If you close the browser just click on the invitation link to resume where you left off. ****

We greatly appreciate your interest and welcome your contribution to this important study!

Delphi Study - Validating a Knowledge City Maturity Model

2. Research Instrument and Interview Protocol

My name is Paul Hector and I would like to thank you for your interest in the research I am conducting within the framework of the dual-degree doctoral Program at the Telecom Ecole de Management (France) and Bangkok University (Thailand).

Both universities seek to ensure that all research conducted by their students follow international best practices. As part of this policy, I am required to explain to you your rights as a participant in this research process and explain how the information you provide will be used.

This Delphi study will be conducted for a maximum of 4 rounds.

Your participation in this Delphi study is confidential and voluntary. Confidentiality means that no information which allows specific comments to be linked to you will be shared with others without your permission. Voluntary means you are fully able to exercise control over the extent of your participation in this study.

The data collected during this Delphi study will inform my doctoral dissertation and the preparation of related academic papers.

Your contribution to this Delphi study may be acknowledged in a list of contributors.

If you wish, the key findings of this study and resulting academic papers may be sent to you.

*** 1. The purpose and conduct of this research study has been explained to me. I willingly agree to participate in this interview and to have my contributions captured, stored and processed.**

☐

Yes ☐

No

Other (please specify)

*** 2. May your name be included in the list of Panelists?**

☐

Yes ☐

No

*** 3. Would you like a copy of the final study and/or any academic papers that may result from this Delphi study?**

☐

☐ Yes

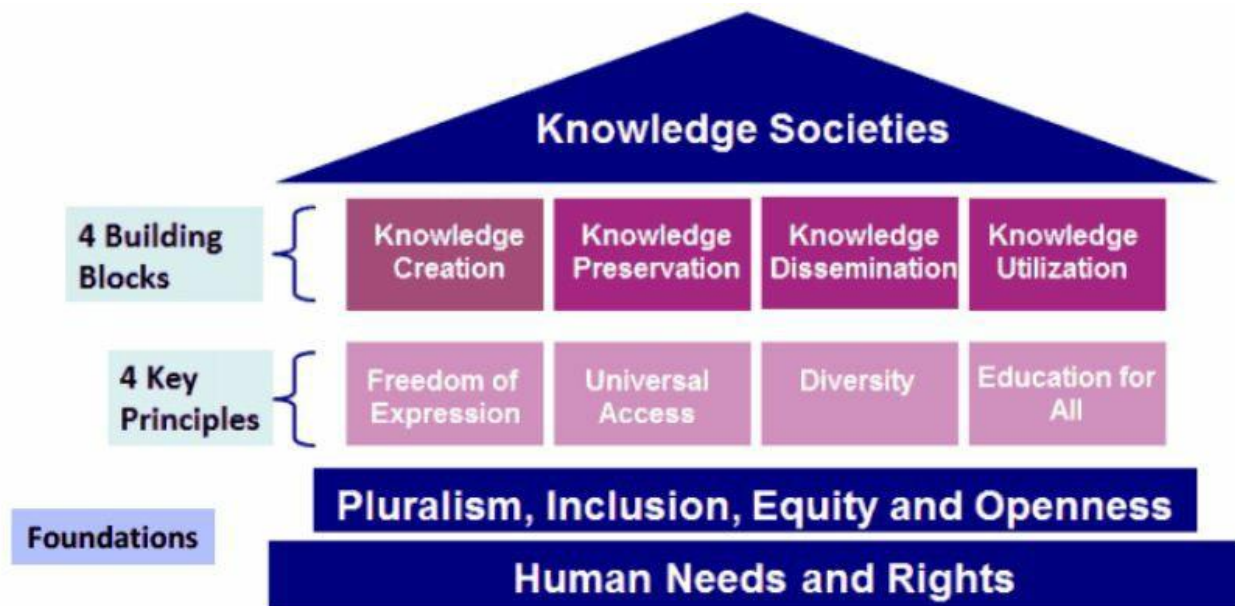
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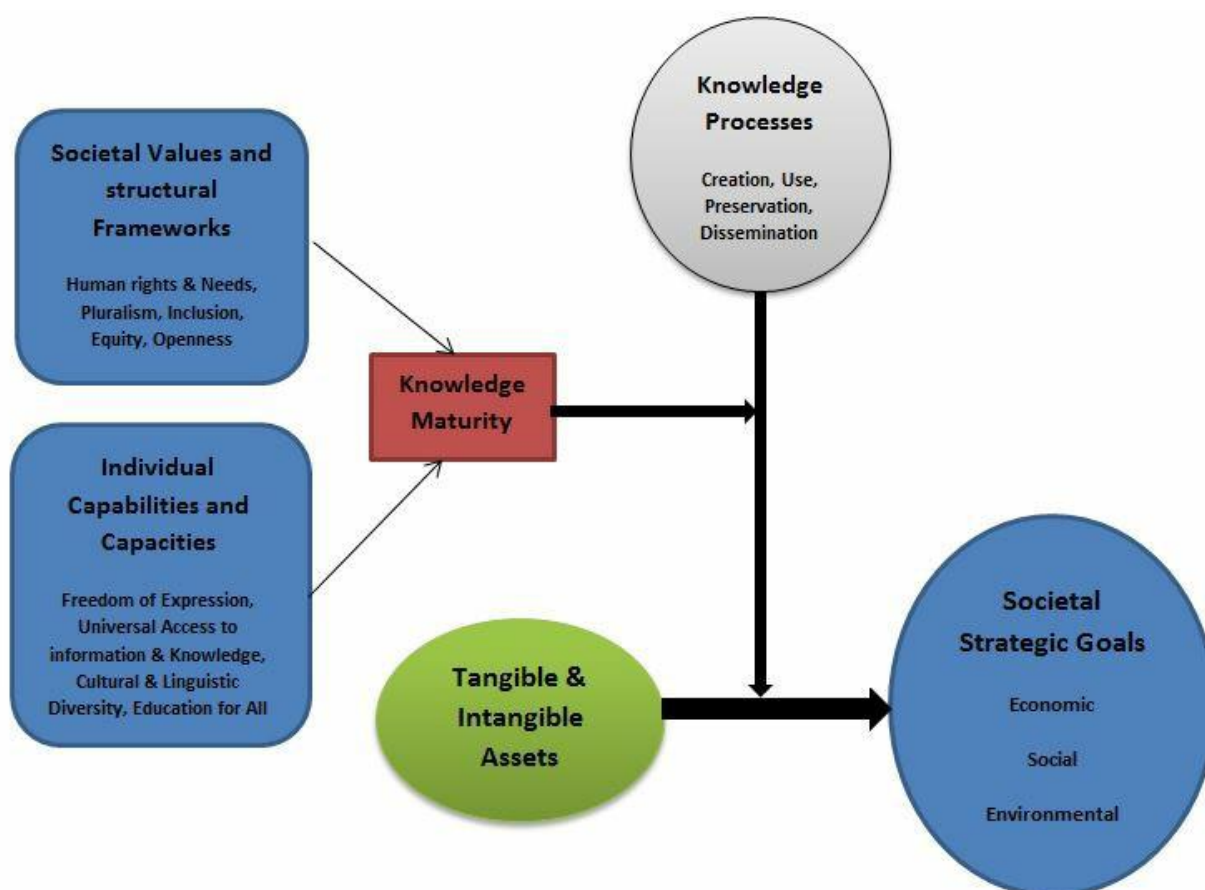
Delphi Study - Validating a Knowledge City Maturity Model

3. Evaluating the Proposed Knowledge-based Development Model

UNESCO Knowledge Societies Conceptual Framework



Proposed Knowledge-based Development Model



* 4. Based on the background information provided, how well does the knowledge-based development model capture the concepts presented in UNESCO's Knowledge Societies Conceptual Framework?

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 5. Please explain your reasoning for the choice you made in the previous question.

* 6. What changes, if any, in your view, could improve the Proposed Knowledge-based Development Model's representation of the UNESCO Knowledge Societies Conceptual Framework?

*** 7. From a big-picture or macro-level policy perspective how do you assess the Proposed Knowledge-based Development Model's representation of the role of knowledge in driving/supporting development?**

Strongly disagree

Disagree

Neutral

Agree

Strongly Agree

☐☐☐☐☐

*** 8. Please explain your choice in the previous question. What suggestions do you have, if any, for improving the Proposed Knowledge-based Development Model?**

9. Are there other essential constructs that should be included in the Proposed Knowledge-based Development Model?

Please take into account UNESCO's perspective of a human-centered vision of Knowledge Societies; the nine constructs in the UNESCO Framework - Pluralism, Inclusion, Equity, Openness, Human Needs & Rights, Freedom of Expression, Universal Access, Diversity, Education for All - and their contribution to the creation of social, structural and human capital, as outlined.

☐

Yes ☐

No

*** 10. Please explain your choice in the previous question.**

If you wish to propose additional constructs, please indicate the name(s) of the construct(s) and also provide its/their definition(s).

Delphi Study - Validating a Knowledge City Maturity Model

4. Human Rights and Needs

Ten (10) core international treaties monitored by the United Nations define the scope of Human Rights and Needs (<http://www.ohchr.org/EN/ProfessionalInterest/Pages/CoreInstruments.aspx>).

This study proposes 5 indicators – Awareness, Accountability, Non-discrimination, Participation and Structural Measures – for assessing the Human Rights and Needs construct:

- a) Awareness relates to creating conditions through advocacy and education to ensure that those with a responsibility to respect, protect and fulfill human rights (duty-bearers, e.g. police) do so; and empower persons entitled to protection (rights holders e.g. citizens) to claim protection and hold duty-bearers accountable (OHCHR, 2012b);
- b) Accountability refers to oversight of the actions and decisions of public officials that guarantee that government initiatives meet their stated objectives and respond to the needs of the community they are meant to benefit. (De Beco, 2008; Naval et al., 2008; OHCHR, 2012b);
- c) Non-discrimination ensures that persons can enjoy the rights and freedoms they are entitled to regardless of race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status (Human Rights Committee for the Covenant on Civil and Political Rights);
- d) Participation is the ability to take part in the conduct of public affairs such as decision-making and to access humanitarian assistance (OHCHR, 2011, 2013); and
- e) Structural measures indicate, whether a State has ratified relevant treaties, and is undertaking efforts such as establishing policies, laws and institutions to uphold its treaty obligations (De Beco, 2008; Naval et al., 2008; OHCHR, 2012b).

*** 11. Taken together as a group, in your view, how adequately do these five indicators serve as proxies for assessing the Human Rights and Needs climate/environment of a city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

*** 12. Please arrange the proposed indicators in terms of your perceived importance of their ability to assess the Human Needs and Rights climate/environment of the city [1 - most important, 5 - least important].**

		Accountability
		Awareness
		Non-discrimination
		Participation
		Structural Measures

*** 13. Please provide suggestions for improving assessment of the Human Rights & Needs construct. For example:**

- a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s);**
- b) Identify and explain any inadequacies or redundancies in the indicators proposed for this construct;**
- c) Any other comments you may wish to provide.**

Delphi Study - Validating a Knowledge City Maturity Model

5. Pluralism

Globalization is increasing the diversity of cities, but this does not imply that social groups within the city are interacting.

Tolerance does not require social groups to learn about each other. Pluralism however, seeks to building mutual understanding and go beyond stereotypes by seeking to learn about the “others”.

Pluralism does not require groups to reconcile or renounce their positions but rather to develop greater self-awareness of their positions, recognize the right of other groups to do so, reflect on these different positions and their potential implications.

Pluralism is a commitment to dialogue with the “others” and oneself that is externally and internally reflective. Dialogue is not agreement; it is a commitment to be actively engaged in identifying areas of common ground as well as points of difference.

Pluralism does not remove differences but sees diversity as a collective source of common good, which when enabled, becomes a foundation for social cohesion.

Key sources of differences around which pluralism may be assessed are (United Nations General Assembly, 1948; Becker, 2000; The World Values Survey (2010, 2005); Ritzen et al., 2000; OECD, 2014): Value systems exhibited in religious or political preferences and attitudes to sexual orientation; differences in physical appearance; differences around citizenship/national identity; and differences around group power dynamics.

Proposed Indicators:

- a) Attitudes around disability/ethnicity/race;
- b) Attitudes to immigrants/migrants;
- c) Attitudes to religious/political values; and
- d) Attitudes to multi-stakeholder coalition building.

14. Taken together as a group, in your view, how adequately do these four indicators serve as proxies for assessing the Pluralism climate/environment of a city?

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 15. Please arrange the proposed indicators in terms of your perceived importance of their ability to assess the Pluralism climate/environment of the city [1 - most important, 4 - least important].

- Attitudes around disability/ethnicity/race
- Attitudes to immigrants/migrants
- Attitudes to religious/political values
- Attitudes to coalition building.

*** 16. Please provide suggestions for improving assessment of the Pluralism construct. For example:**

- a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s);
- b) Identify and explain any inadequacies or redundancies in the indicators proposed for this construct;
- c) Any other comments you may wish to provide.

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6. Inclusion

Inclusion is concerned with the causes of social exclusion and of poverty.

Deficiencies in social structures may prevent individuals and groups from accessing services, opportunities or resources to which they are entitled under international, regional and national laws. These barriers, which may be unnoticed, are thought to result from poverty in combination with social exclusionary factors such as illiteracy, linguistic barriers, or even the way in which social services are conceived, designed or delivered.

Individuals and groups with shared characteristics, such as membership in an ethnic groups, gender, race, criminality, literacy levels, female-headed household, disability and social status amongst others, may be at an increased risk for social exclusion (Bhalla and Lapeyre, 1997; Gandelman, 2011; ILO, 2012; Justino and Litchfield, 2005; World Bank, 2013). The groups that face exclusion may vary across time and place.

Poverty arises when individuals lack the economic resources that enable them to fulfill their needs (Atkinson et al., 2011) or lack the capabilities to overcome their deprivations Sen (1999).

Based on the foregoing literature, the following indicators are proposed:

Poverty-related aspects:

- a) Access to safe and decent work opportunities
- b) Level of support for women's participation in economic activities

Social Exclusion related aspects:

- a) Access to basic social services (health care, shelter, primary and secondary education etc)
- b) Access to civic and political space

*** 17. Taken together as a group, in your view, how adequately do these four proposed indicators serve as proxies for assessing the level of Inclusion in the city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. Please arrange the proposed indicators in terms of your perceived importance of their ability to assess the level of Inclusion within the city [1 - most important, 4 - least important].

- ☐ Access to safe and decent work opportunities
- ☐ Level of support for women's participation in economic activities
- ☐ Access to basic social services
- ☐ Access to civic and political space

*** 19. Please provide suggestions for improving assessment of the Inclusion construct. For example:**

a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s);

b) Identify and explain any inadequacies or redundancies in the indicators proposed for this construct;

c) Any other comments you may wish to provide.

Delphi Study - Validating a Knowledge City Maturity Model

7. Equity

Equity is a multi-dimensional concept that is concerned both with people's ability to access resources; that is to say social services as well as economic opportunities; and the outcomes they are able to achieve (OECD, 2012).

In the globalized, knowledge-based economy shifts in the economic landscape are frequent, so social protection programmes that ensure access to health care, shelter and training that enable workers to develop new employable skills are critical for ensuring equity (Stiglitz, 2012).

Qualitative aspects, such as the consistency and quality of social services and goods, ensuring adequate awareness and the observance of democratic processes in their design and delivery, and monitoring the extent to which policies and programmes deliver the same impacts and outcomes for all groups are important considerations in assessing equity (Dulal et al., 2009).

Equity on the basis of gender, represents an area of such significance that it has been formally incorporated into the Millennium Development Goals (United Nations, 2014). Gender equity can therefore, provide a useful bellwether for the progress amongst at risk groups.

While no clear benchmarks for “acceptable” levels of inequity exist, the literature emphasizes the importance of addressing the needs of the most vulnerable groups.

Based on the foregoing, the following indicators are proposed:

- a) Access to basic social services
- b) Evenness in the distribution of social costs and benefits
- c) Gender mainstreaming in public policies
- d) Adequate communication and fair access to social services and goods

*** 20. Taken together as a group, in your view, how adequately do these four proposed indicators serve as proxies for assessing the level of Equity in the city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 21. Please arrange the proposed indicators in terms of your perceived importance of their ability to assess the level of Equity within the city [1 - most important, 4 - least important].

- Access to basic social services
- Evenness in the distribution of social costs and benefits
- Gender mainstreaming in policy
- Adequate communication and fair access to social services and goods

*** 22. Please provide suggestions for improving assessment of the Equity construct. For example:**

- Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s);**
- Identify and explain any inadequacies or redundancies in the indicators proposed for this construct;**
- Any other comments you may wish to provide.**

Delphi Study - Validating a Knowledge City Maturity Model

8. Openness

This term encompasses three dimensions:

The first relates to transparency and participation in public decision-making and its outcomes. This involves the ability to access the information of public administration services and to engage and cooperate with public officials to influence policy and decision-making processes (Keith, 2012; UNESCO, 2005).

The second concerns curiosity or willingness to venture outside one's frame of reference. This concept comes from the field of psychology (Judge et al., 2013; Matthews et al., 2004; McCrae et al. 1992) and is associated with receptivity to inner feelings and emotions, a willingness to try different activities, a preference for variety rather than the familiar, receptivity to new ideas, as well as a liberal spirit and readiness to adopt progressive positions (Judge et al., 2013, Matthews et al., 2004; McCrae et al. 1992).

The third aspect of openness is related to the "open movement", which promotes open intellectual property standards, collaboration, the free sharing and co-creation of information and knowledge-based goods and services; particularly those essential for human development; within the public domain (Bissell, 2009; Downes, 2007; UNESCO, 2005).

Based on the foregoing, the following indicators are proposed:

- a) Transparency and participation in public policy/decision-making processes;
- b) Willingness to explore unconventional approaches to solving societal challenges; and
- c) Promotion of open standards.

*** 23. Taken together as a group, in your view, how adequately do these three indicators serve as proxies for assessing the level of Openness in the city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 24. Please arrange the proposed indicators in terms of your perceived importance of their ability to assess the level of Openness in the city [1 - most important, 5 - least important].

Transparency and participation in public policy/decision-making processes

Willingness to explore unconventional approaches to solving societal challenges


 Promotion of open standards

*** 25. Please provide suggestions for improving assessment of the Openness construct. For example:**

- a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s);
- b) Identify and explain any inadequacies or redundancies in the indicators proposed for this construct;
- c) Any other comments you may wish to provide.

Delphi Study - Validating a Knowledge City Maturity Model

9. Freedom of Expression

Knowledge societies are characterized by their reliance on information and knowledge for societal development. Freedom of expression is essential for the dissemination, questioning/debating, comparison, validation and absorption of knowledge as well as the creation of new information and knowledge (UNESCO, 2005). Without freedom of expression the exchange of views is not encouraged and without this dialogue there can be no sharing of knowledge.

A diversity of views and perspectives ensures that citizens are well informed of developments, have a more holistic understanding of the issues that impact their lives and are adequately prepared to exercise their rights and responsibilities within their societies (UNESCO, 2005; Valcke, 2009). A mix of media ownership models – community based, for-profit, public broadcasters etc. - can also ensure that values other than economic ones determine what information is shared and the editorial choices that are made (Peters, 2010; UNESCO, 2010).

To adequately conduct their role of creating a space for public discussion, facilitating the flow of quality information on relevant issues and serving as a check on the abuse of power by the powerful, it is essential for media practitioners to receive adequate professional preparation to develop the skills needed to undertake these tasks (Peters, 2010, Trappel and Maniglo, 2009).

As part of their international obligations, states are to create an enabling environment for the media including the provision of national-wide service coverage. Within this mandate, States are to establish national broadcast and information policies as well as a regulatory framework that supports the dissemination of diverse viewpoints and supports a public broadcasting service function that is free from political as well as commercial influences and pressure (Banerjee & Seneviratne, 2005; OHCHR, 2012; UNESCO & World Radio and Television Council, 2001).

Based on the foregoing, the following indicators are proposed:

- a) Societal climate for free discussion and exchange;
- b) Diversity, sustainability and independence of media channels;
- c) Professional standards amongst media practitioners; and
- d) Independence, effectiveness and transparency of public broadcasting services.

*** 26. Taken together as a group, in your view, how adequately do these four indicators serve as proxies for assessing Freedom of Expression in the city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 27. Please arrange the proposed indicators in terms of your perceived importance to their ability to assess the climate/environment from Freedom of Expression in the city [1 - most important, 4 - least important].**

- ■ ■ Social climate for free discussion and exchange
- ■ ■ Diversity, sustainability and independence of media channels
- ■ ■ Professional standards amongst media practitioners
- ■ ■ Independence, effectiveness and transparency of public broadcasting services

*** 28. Please provide suggestions for improving assessment of the Freedom of Expression construct. For example:**

- a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s);
- b) Identify and explain any inadequacies or redundancies in the indicators proposed for this construct;
- c) Any other comments you may wish to provide.

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Delphi Study - Validating a Knowledge City Maturity Model

10. Universal Access to Information and Knowledge

The digital divide is the difference in ability between countries, within countries and between individuals, to access, use and benefit from information and knowledge flows facilitated by ICT (Campbell, 2001; Bhatia, 2001; Lu, 2001; Schlichter & Danylchenko, 2014). The removal of infrastructural barriers and the development of the necessary human capacities are required to overcome the digital divide.

Rapid urbanization and the dominant urban spatial forms which appear to promote dependence on cars, points to the importance of public transportation systems as an important enabler in allowing all citizens to meet and to build social networks, to access opportunities, goods and services (Gray et al., 2006; Lamont et al., 2013; Mees, 2010; Jenkins, 2013; Sietchiping, et al. 2012; UN-HABITAT, 2009).

At the United Nations' World Summit on the Information Society (WSIS) held in 2003 and 2005, Governments were mandated to develop “e-government strategies... for strengthening relationships with citizens” (<http://www.itu.int/wsis/docs/geneva/official/poa.html#c7-15>). Governments committed to develop infrastructure to support the internal connectivity of government departments and to enable citizens – including developing human capacities - to electronically interact with governments.





Based on the foregoing, the following indicators are proposed:

- a) Adequacy and accessibility of the public transportation systems;
- b) Availability of on-line access to government services;
- c) Affordability of Internet services; and,
- d) Efforts to build human capacity to use ICT.

*** 29. Taken together as a group, in your view, how adequately do the four proposed indicators serve as proxies for assessing Universal Access to Information in the city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 30. Please arrange the proposed indicators in terms of your perceived importance to their ability to assess Universal Access to Information in the city [1 - most important, 4 - least important].

	<input type="text" value="1.00"/>	Adequacy and accessibility of the public transportation system
	<input type="text" value="1.00"/>	Availability of on-line access to government services
	<input type="text" value="1.00"/>	Affordability of Internet services
	<input type="text" value="1.00"/>	Efforts to build human capacity to use ICT

*** 31. Please provide suggestions for improving assessment of the Universal Access to Information construct. For example:**

- a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s);
- b) Identify and explain any inadequacies or redundancies in the indicators proposed for this construct;
- c) Any other comments you may wish to provide.

Delphi Study - Validating a Knowledge City Maturity Model

11. Cultural & Linguistic Diversity

Globalization is increasing the heterogeneity of societies bringing together new groups, new ideas and creating opportunities for new ideas, creative expression and innovation. Stock (2011) cites a study by Nathan & Low (2010) in London, which found correlations for firms engaged in knowledge intensive activities between innovativeness and the diversity of their workforce. According to Johnstone (2002), multilingual persons exhibit higher levels of creativity than monolingual ones, as judged on their performance across a range of aptitude tests that assess skills in areas such as divergent thinking and cognitive flexibility that are positively correlated with creativity. In an information and knowledge society where knowledge and information creation are drivers of economic production, linguistically diverse cultures should display superior problem-solving and economic performance (Johnstone, 2002; Skutnabb-Kangas, 2002).

Looseley (2004) points to practices where some States only promote “high culture”, that is to say cultural expressions and heritage that is considered as “professionally produced excellence in the traditional arts and heritage that reflects and embodies intellectual rigor”. These efforts produce what authors like Burri (2013) and Pyykkönen (2012) refer to as cultural imperialism in which legitimacy is attributed only to a narrow range of a city or nation’s cultural expressions, heritage and the individuals who are able to appreciate them. This view embeds implicit and sometimes explicit social exclusionary and normative markers of quality, virtue and value (Clements, 2006; Hill, 2004) which leads to the languishing of important aspects and sources of cultural value.

UNESCO’s Convention on the Protection and Promotion of the Diversity of Cultural Expressions is an internationally binding legal instrument which entered into force in March 2007. Amongst other aspects the Convention seeks to effectively address the two independent roles played by cultural activities, goods and services as i. transmitters of cultural identity, value and meaning, as well as ii. carriers of economic and commercial value. The UNESCO Convention seeks to enhance the role of cultural expressions as a source of economic dynamism for communities. This approach also recognizes that the survival of cultural expressions is tied to their ability to become part of the daily life.

Based on the foregoing, the following indicators are proposed:

- a) Extent of support for the city’s breadth of heritage and cultural expressions;
- b) Fostering and promotion of multilingualism; and
- c) Recognition and promotion of cultural industries.

*** 32. Taken together as a group, in your view, how adequately do these three proposed indicators serve as proxies for assessing the Cultural & Linguistic Diversity of the city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 33. Please arrange the proposed indicators in terms of your perceived importance to their ability to assess the Cultural & Linguistic Diversity of the city [1 - most important, 3 - least important].**

<input type="checkbox"/>	<input type="text"/>	Extent of support for the city's breadth of heritage and cultural expressions
<input type="checkbox"/>	<input type="text"/>	Fostering and promotion of multilingualism
<input type="checkbox"/>	<input type="text"/>	Recognition and promotion of cultural industries

*** 34. Please provide suggestions for improving assessment of the Cultural & Linguistic Diversity construct. For example:**

a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s);

b) Identify and explain any inadequacies or redundancies in the indicators proposed for this construct;

c) Any other comments you may wish to provide.

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12. Education for All

Education is the principal contributor to the development of human capital (Blaug, 1976; Gamerschlag, 2013; Keeley, 2007; UNESCO, 2005). Human capital theory sees the development of human capital as the key driver of economic growth, so in the knowledge society, education is crucial for economic growth (Becker, 1964, Gilles, 2011). The quality of educational processes and the ability to create knowledge relevant to the problems the society needs to solve will determine the immediate value of this human capital. Mastering learning to learn, ensures longer term relevance and enables individuals and societies to be more successful in navigating changes.

In the globalized, highly mobile work environment, cities compete to attract and retain the human capital critical to their success (Činčikaitė & Paliulis, 2013; OECD, 2005; Singhal et al., 2013; Yigitcanlar et al., 2007; Yigitcanlar & Lönnqvist, 2013). Yigitcanlar et al. (2007) identify factors such as quality childcare and education for school age children, cultural amenities, affordable housing and private healthcare as particularly important to knowledge workers.

The role of cities as connecting points between nations, cross-roads for trade, tourism destinations and global magnets for human capital point to the importance of the multicultural skills of citizens to support these networks (Scott, 2008; OECD, 2013). Working in a multicultural environment involves linguistic skills, cognitive and affective attitudes, behaviors and judgment, collectively referred to as intercultural competencies (Bazgan & Popa, 2014).

ICT systems and Internet infrastructure enables the flow of information, knowledge goods and services across global networks. The ability of its citizenry to participate in these networks determines the city's ability to be effective and efficient nodes in this global network architecture.

Based on the foregoing, the following indicators are proposed:

- a) Ability of the city to nurture its human talent;
- b) Ability to attract and retain talent;
- c) Support for global citizenship education (intercultural competence); and
- d) Efforts to enhance citizens' media and information literacy (digital literacy).

*** 35. Taken together as a group, in your view, how adequately do these four proposed indicators serve as proxies for assessing the Education for All construct within the city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 36. Please arrange the proposed indicators in terms of your perceived importance to their ability to assess the Education for All Construct of the city [1 - most important, 4 - least important].

- Ability of the city to nurture its human talent
- Ability to attract and retain talent
- Support for global citizenship education
- Efforts to enhance citizens' media and information literacy (digital literacy)

*** 37. Please provide suggestions for improving assessment of the Education for All construct. For example:**

- a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s);
- b) Identify and explain any inadequacies or redundancies in the indicators proposed for this construct;
- c) Any other comments you may wish to provide.

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13. Self Assessment

*** 38. What is your level of knowledge on the inter-disciplinary constructs found under the Societal Values and Structural Frameworks (Foundations in UNESCO's Knowledge Societies Conceptual Framework) component of the Proposed Knowledge-based Development Model?**

	Very high	High	Adequate	Low	Very low
Human Rights and Needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pluralism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inclusion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Equity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Openness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 39. What is your level of knowledge on the inter-disciplinary constructs found under the Individual Capabilities and Capacities (Key Principles in UNESCO's Knowledge Societies Conceptual Framework) component of the Proposed Knowledge-based Development Model?**

	Very high	High	Adequate	Low	Very low
Freedom of Expression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Universal Access to Information and Knowledge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cultural and Linguistic diversity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Education for All	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Round 2 Questionnaire

Round Two: Delphi Study - Validating a Knowledge City Maturity Model

1. Welcome and Overview

Welcome to Round 2 of this Delphi Study on knowledge-based development which seeks to make UNESCO's Knowledge Societies Conceptual Framework measurable and operational in cities of the developing world.

My name is Paul Hector and I would like to thank you for your interest in the research I am conducting within the framework of the dual-degree doctoral Program at the Telecom Ecole de Management (France) and Bangkok University (Thailand).

This Round has fewer questions than the first Round, the question formats will also enable you to complete the survey accurately and more rapidly.

As in the first Round:

**** Your responses are automatically saved, you can use the back and forward buttons to go between pages if you want to change any of your responses****

**** If you close the browser just click on the invitation link to resume where you left off. ****

Your interest and contribution to this study is greatly appreciated!

*** 1. Did you participate in Round 1 of the Delphi study?**

- ☐ Yes
- ☐ Started survey but was not able to complete it
- ☐ No

Round Two: Delphi Study - Validating a Knowledge City Maturity Model

2.

My name is Paul Hector and I would like to thank you for your interest in the research I am conducting within the framework of the dual-degree doctoral Program at the Telecom Ecole de Management (France) and Bangkok University (Thailand).

Both universities seek to ensure that all research conducted by their students follow international best practices. As part of this policy, I am required to explain to you your rights as a participant in this research process and explain how the information you provide will be used.

This Delphi study will be conducted for a maximum of 4 rounds.

Your participation in this Delphi study is confidential and voluntary. Confidentiality means that no information which allows specific comments to be linked to you will be shared with others without your permission. Voluntary means you are fully able to exercise control over the extent of your participation in this study.

The data collected during this Delphi study will inform my doctoral dissertation and the preparation of related academic papers.

Your contribution to this Delphi study may be acknowledged in a list of contributors.

If you wish, the key findings of this study and resulting academic papers may be sent to you.

*** 2. The purpose and conduct of this research study has been explained to me. I willingly agree to participate in this interview and to have my contributions captured, stored and processed.**

☐

Yes ☐

No

Other (please specify)

*** 3. May your name be included in the list of Panelists?**

☐

Yes ☐

No

*** 4. Would you like a copy of the final study and/or any academic papers that may result from this Delphi study?**

☐

☐ Yes

s

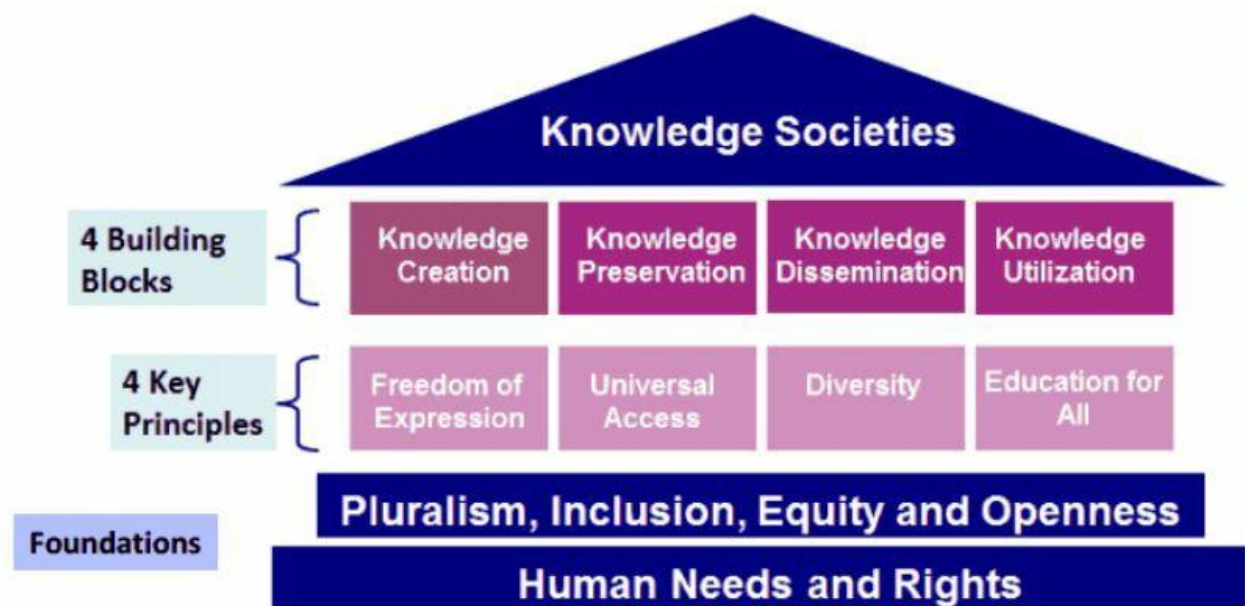
No

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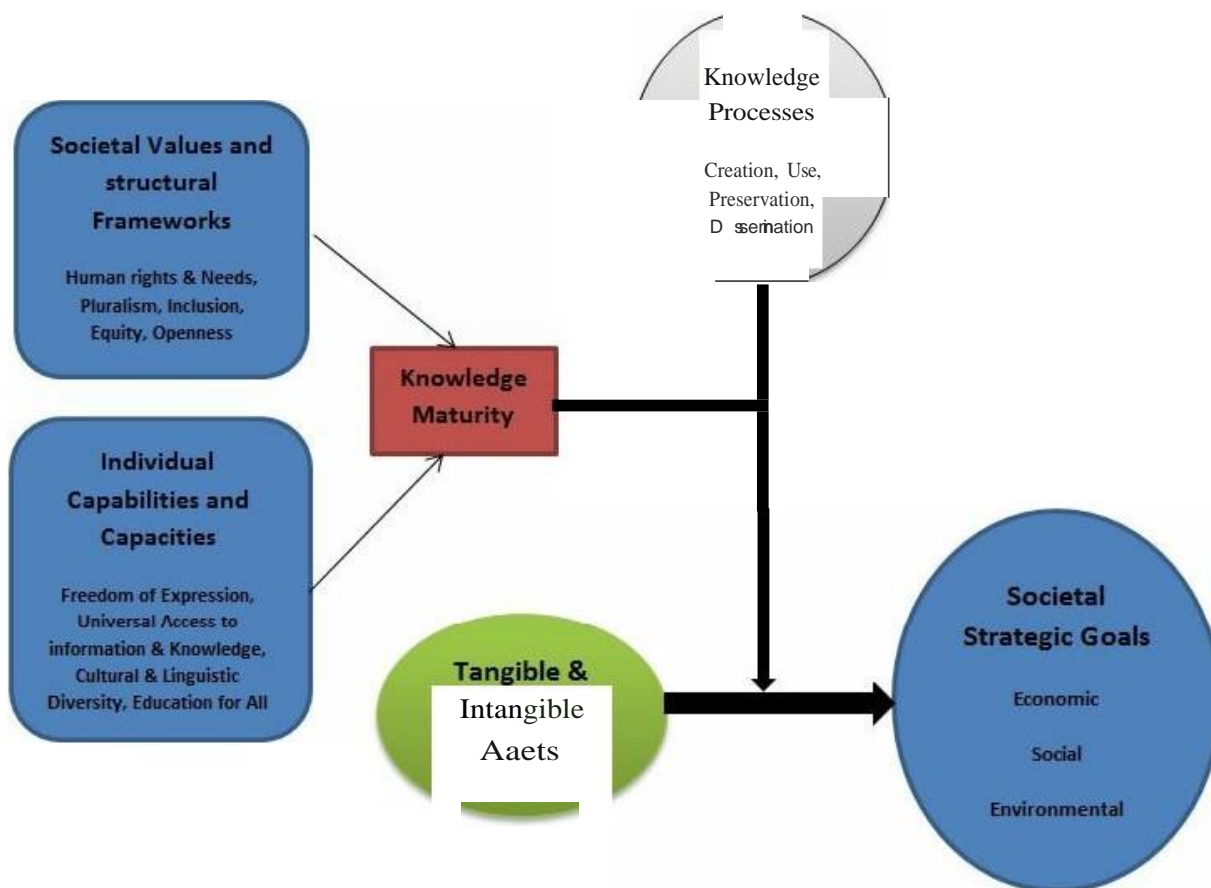
3. UNESCO's Framework and the Proposed Knowledge-based Development Model

As a reminder, please find below UNESCO's Knowledge Societies Conceptual Framework as well as the Proposed Knowledge-based Development Model that were both presented in Round 1.

UNESCO Knowledge Societies Conceptual Framework



Knowledge-based Development Model Presented in Round 1



Round Two: Delphi Study - Validating a Knowledge City Maturity Model

4. Revised Knowledge-based Development Model Resulting from Round 1

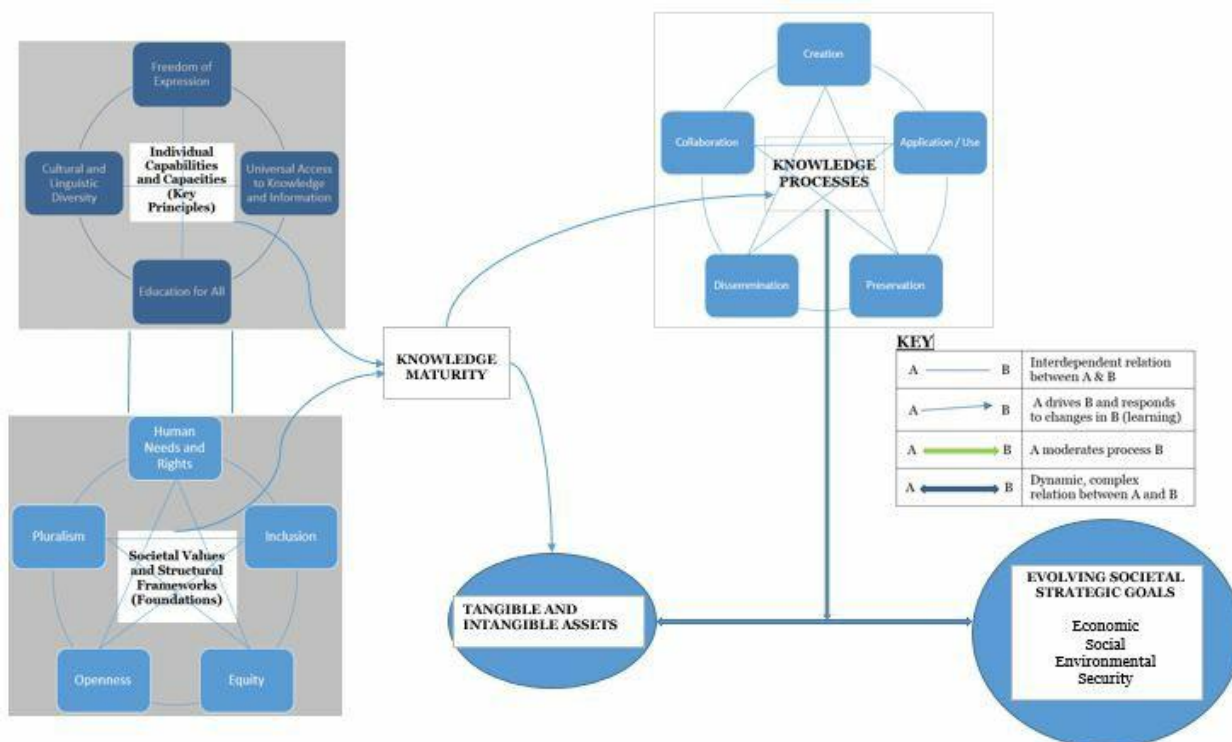
57.6% of panelists felt that the Knowledge-based Development Model proposed in the first round of the Delphi captured the concepts in UNESCO's Knowledge Societies Conceptual Framework. 57.6% of panelists expressed satisfaction with the model's representation of the role of knowledge in driving and supporting development from a big-picture or macro-level perspective.

Below is the revised Knowledge-based Development Model that takes into account the comments received during the first Round of the Delphi panel.

To enhance understanding of the model, symbols used in the model were harmonized. A “key” was also incorporated in the model so as to assist with the interpretation of the relations between components.

The comments by panelists, as well as the existing body of research, points to the interdependence and mutually reinforcing nature of the nine model constructs. While the directionality and strength of these influences cannot be ascertained at this time, panelists have nevertheless underscored the importance of indicating these interactions. In a similar way, panelists also highlighted the contribution of knowledge maturity to the societal “stock” of intangible and tangible assets. The important role of collaboration as a distinct knowledge process has also been noted. The foregoing key points have been duly incorporated and reflected in the revised model.

Revised Knowledge-based Development Model After Round 1 (Please use "CTRL" & "+" to increase image size).



*** 5. Based on the background information provided, how well does the revised knowledge-based development model capture the concepts presented in UNESCO's Knowledge Societies Conceptual Framework?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 6. From a big-picture or macro-level policy perspective how do you assess the revised Knowledge-based Development Model's representation of the role of knowledge in driving/supporting development?**

Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 7. Please provide your comments on the revised model.**

Round Two: Delphi Study - Validating a Knowledge City Maturity Model

5. Human Rights and Needs

87.9 % of panelists expressed satisfaction with the five proposed indicators for Human Rights and Needs. As consensus was achieved both from a qualitative and quantitative perspective no further indicators need to be selected.

As a reminder the information on the Human Rights and Need construct is included below.

Ten (10) core international treaties monitored by the United Nations define the scope of Human Rights and Needs (<http://www.ohchr.org/EN/ProfessionalInterest/Pages/CoreInstruments.aspx>).

This study proposes 5 indicators – Awareness, Accountability, Non-discrimination, Participation and Structural Measures – for assessing the Human Rights and Needs construct:

a) Awareness relates to creating conditions through advocacy and education to ensure that those with a responsibility to respect, protect and fulfill human rights (duty-bearers, e.g. police) do so; and empower persons entitled to protection (rights holders e.g. citizens) to claim protection and hold duty-bearers accountable (OHCHR, 2012b);

b) Accountability refers to oversight of the actions and decisions of public officials that guarantee that government initiatives meet their stated objectives and respond to the needs of the community they are meant to benefit. (De Beco, 2008; Naval et al., 2008; OHCHR, 2012b);

c) Non-discrimination ensures that persons can enjoy the rights and freedoms they are entitled to regardless of race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status (Human Rights Committee for the Covenant on Civil and Political Rights);

d) Participation is the ability to take part in the conduct of public affairs such as decision-making and to access humanitarian assistance (OHCHR, 2011, 2013); and

e) Structural measures indicate, whether a State has ratified relevant treaties, and is undertaking efforts such as establishing policies, laws and institutions to uphold its treaty obligations (De Beco, 2008; Naval et al., 2008; OHCHR, 2012b).

8. Optional - Please provide your comments on this construct

Round Two: Delphi Study - Validating a Knowledge City Maturity Model

6. Pluralism

65.5% of Delphi panelists expressed satisfaction with the initial set of indicators that were proposed. Panelists recommended the following indicators to further strengthen this set of indicators:

Attitudes to economic status,
Attitudes to gender equality, and
Attitudes to sexual preferences/orientation.

The taxonomy or categorization used for grouping pluralism indicators is based on: a) Attitudes to physical characteristics or group markers; b) Attitudes to locale/origin; c) Attitudes to values/lifestyle choices; and d) Attitudes to group power dynamics. On the basis of this taxonomy the earlier proposed set of indicators is updated as below:

- a) Attitudes around disability/ethnicity/gender equality/race;
- b) Attitudes to immigrants/migrants;
- c) Attitudes to religious/political values/economic status/ sexual preferences or orientation
- d) Attitudes to multi-stakeholder coalition building.

As a reminder, the information provided earlier on the pluralism construct is included below:

Globalization is increasing the diversity of cities, but this does not imply that social groups within the city are interacting.

Tolerance does not require social groups to learn about each other. Pluralism however, seeks to building mutual understanding and go beyond stereotypes by seeking to learn about the “others”.

Pluralism does not require groups to reconcile or renounce their positions but rather to develop greater self-awareness of their positions, recognize the right of other groups to do so, reflect on these different positions and their potential implications.

Pluralism is a commitment to dialogue with the “others” and oneself that is externally and internally reflective. Dialogue is not agreement; it is a commitment to be actively engaged in identifying areas of common ground as well as points of difference.

Pluralism does not remove differences but sees diversity as a collective source of common good, which when enabled, becomes a foundation for social cohesion.

Key sources of differences around which pluralism may be assessed are (United Nations General

Assembly, 1948; Becker, 2000; The World Values Survey (2010, 2005); Ritzen et al., 2000; OECD, 2014): Value systems exhibited in religious or political preferences and attitudes to sexual orientation; differences in physical appearance; differences around citizenship/national identity; and differences around group power dynamics.

*** 9. Taken together as a group, in your view, how adequately does the revised set of indicators serve as proxies for assessing the Pluralism climate/environment of a city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Optional - Please provide your comments on this construct

Round Two: Delphi Study - Validating a Knowledge City Maturity Model

7. Inclusion

75.0% of Delphi panelists expressed satisfaction with the initial set of indicators that were proposed:

Poverty-related aspects:

- a) Access to safe and decent work opportunities
- b) Level of support for women's participation in economic activities

Social Exclusion related aspects:

- a) Access to basic social services (health care, shelter, primary and secondary education etc)
- b) Access to civic and political space

Panelists recommended the following indicators to further improve this set of indicators:

Level of support for handicapped person's participation in economic activities;

Level of support for the participation of youth in economic activities; and

Level of support for entrepreneurial activity (access to credit/training).

With regards to the proposed indicators it may be useful to consider the following statistics:

a) According to the World Health Organization, at least 10% of the global population has a disability, in developing post-conflict regions this may be as great as 25%. The World Bank has further reported that persons with disabilities are over-represented among the poor.

b) According to UNESCO, persons under the age of 25 currently make up around 50% of the world's population. In addition young men and women represent 45% of the users of Internet and social media. According to ILO youth unemployment levels are typically at least 2 times higher than for the broader population.

c) According to the Brookings Institute 95 percent of all businesses are small and medium enterprises (SMEs). In low- and lower-middle-income countries, more than 50 percent of employees work in companies with fewer than 100 employees. While SMEs represent an important component of the private sector in the developing world, they face significantly higher obstacles to their operation and growth than large enterprises. Among these obstacles, are the lack of access to appropriate financial services, especially lending services. The World Bank further reports that 65-70 % of SMEs are located in developing countries and that around 31-38 % of these are formally registered as owned or partly owned by women.

As a reminder, the information provided earlier on the Inclusion construct is included below:

Inclusion is concerned with the causes of social exclusion and of poverty.

Deficiencies in social structures may prevent individuals and groups from accessing services, opportunities or resources to which they are entitled under international, regional and national laws. These barriers, which may be unnoticed, are thought to result from poverty in combination with social exclusionary factors such as illiteracy, linguistic barriers, or even the way in which social services are conceived, designed or delivered.

Individuals and groups with shared characteristics, such as membership in an ethnic groups, gender, race, criminality, literacy levels, female-headed household, disability and social status amongst others, may be at an increased risk for social exclusion (Bhalla and Lapeyre, 1997; Gandelman, 2011; ILO, 2012; Justino and Litchfield, 2005; World Bank, 2013). The groups that face exclusion may vary across time and place.

Poverty arises when individuals lack the economic resources that enable them to fulfill their needs (Atkinson et al., 2011) or lack the capabilities to overcome their deprivations Sen (1999).

A revised set of indicators is presented to the Panel for the consideration as follows:

Poverty-related aspects:

- a) Access to safe and decent work opportunities
- b) Level of support for the participation of vulnerable groups (women, youth, persons with disabilities) in economic activities

Social Exclusion related aspects:

- a) Access to basic social services (health care, shelter, primary and secondary education etc)
- b) Access to civic and political space
- c) Access to credit/training (Level of support for entrepreneurial activity)

*** 11. Taken together as a group, in your view, how adequately does the revised set of five proposed indicators serve as proxies for assessing the level of Inclusion in the city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 12. Please arrange the revised set of indicators in terms of your perceived importance of their ability to assess the level of Inclusion within the city [1 - most important, 5 - least important].**



Access to safe and decent work opportunities



Level of support for the participation of vulnerable groups (women, youth, persons with disabilities) in economic activities



Access to basic social services (health care, shelter, primary and secondary education etc)



Access to civic and political space



Access to credit/training (Level of support for entrepreneurial activity)

13. Optional - Please provide your comments on this construct

Round Two: Delphi Study - Validating a Knowledge City Maturity Model

8. Equity

75.0% of Delphi panelists expressed satisfaction with the initial set of indicators that were proposed:

- a) Access to basic social services
- b) Evenness in the distribution of social costs and benefits
- c) Gender mainstreaming in public policies
- d) Adequate communication and fair access to social services and goods

Panelists recommended the following indicators to further improve the assessment of this construct:

Access to land ownership
Access to reproductive health services
Access to entrepreneurial opportunities (including credit / finance and training)

A fifth indicator will be selected from amongst these three proposals based on the perceived improvement it brings to the initial set of four (4) indicators.

As a reminder, the information provided earlier on the Equity construct is included below:

Equity is a multi-dimensional concept that is concerned both with people's ability to access resources; that is to say social services as well as economic opportunities; and the outcomes they are able to achieve (OECD, 2012).

In the globalized, knowledge-based economy shifts in the economic landscape are frequent, so social protection programmes that ensure access to health care, shelter and training that enable workers to develop new employable skills are critical for ensuring equity (Stiglitz, 2012).

Qualitative aspects, such as the consistency and quality of social services and goods, ensuring adequate awareness and the observance of democratic processes in their design and delivery, and monitoring the extent to which policies and programmes deliver the same impacts and outcomes for all groups are important considerations in assessing equity (Dulal et al., 2009).

Equity on the basis of gender, represents an area of such significance that it has been formally incorporated into the Millennium Development Goals (United Nations, 2014). Gender equity can therefore, provide a useful bellwether for the progress amongst at risk groups.

While no clear benchmarks for “acceptable” levels of inequity exist, the literature emphasizes the importance of addressing the needs of the most vulnerable groups.

*** 14. Please select a fifth indicator from the following group to improve assessment of the Equity construct.**

To do so, kindly arrange the three proposed indicators in terms of improvement that you think each adds to the existing four indicators in assessing the level of Equity within the city [1 - greatest improvement, 3 - least improvement].

- ☐ Access to land ownership
- ☐ Access to reproductive health services
- ☐ Access to entrepreneurial opportunities (including credit / finance and training)

15. Optional - Please provide your comments on this construct

Round Two: Delphi Study - Validating a Knowledge City Maturity Model

9. Openness

Quantitative consensus (81.3%) was achieved for the indicator set that was proposed:

- a) Transparency and participation in public policy/decision-making processes;
- b) Willingness to explore unconventional approaches to solving societal challenges; and
- c) Promotion of open standards.

The qualitative analysis however, suggested that additional improvements could be made by disaggregating the first indicators into two distinct indicators that assessed the transparency and participation aspects individually. In addition the panel recommended the inclusion of two additional indicators. These are shown below:

Transparency in public policy/decision-making processes
Participation in public policy/decision-making processes
Protection of personal privacy and personal data

On this basis a new set of five (5) indicators is proposed to assess the Openness construct:

- i) Willingness to explore unconventional approaches to solving societal challenges
- ii) Promotion of open standards
- iii) Transparency in public policy/decision-making processes
- iv) Participation in public policy/decision-making processes
- v) Protection of personal privacy and personal data

As a reminder, the information earlier provided on the Openness construct is presented below.

This term encompasses three dimensions:

The first relates to transparency and participation in public decision-making and its outcomes. This involves the ability to access the information of public administration services and to engage and cooperate with public officials to influence policy and decision-making processes (Keith, 2012; UNESCO, 2005).

The second concerns curiosity or willingness to venture outside one's frame of reference. This concept comes from the field of psychology (Judge et al., 2013; Matthews et al., 2004; McCrae et al. 1992) and is associated with receptivity to inner feelings and emotions, a willingness to try different activities, a preference for variety rather than the familiar, receptivity to new ideas, as well as a liberal spirit and readiness to adopt progressive positions (Judge et al., 2013, Matthews et al., 2004; McCrae et al.

1992).

The third aspect of openness is related to the “open movement”, which promotes open intellectual property standards, collaboration, the free sharing and co-creation of information and knowledge-based goods and services; particularly those essential for human development; within the public domain (Bissell, 2009; Downes, 2007; UNESCO, 2005).

*** 16. Taken together as a group, in your view, how adequately does the revised set of five (5) indicators serve as proxies for assessing the level of Openness in the city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 17. Please arrange the revised set of indicators in terms of your perceived importance of their ability to assess the level of Openness in the city [1 - most important, 5 - least important].**

<input type="checkbox"/>	<input type="text"/>	Willingness to explore unconventional approaches to solving societal challenges
<input type="checkbox"/>	<input type="text"/>	Promotion of open standards
<input type="checkbox"/>	<input type="text"/>	Transparency in public policy/decision-making processes
<input type="checkbox"/>	<input type="text"/>	Participation in public policy/decision-making processes
<input type="checkbox"/>	<input type="text"/>	Protection of personal privacy and personal data

18. Optional - Please provide your comments on this construct

Round Two: Delphi Study - Validating a Knowledge City Maturity Model

10. Freedom of Expression

87.5% of Delphi panelists expressed satisfaction with the initial set of indicators that was proposed:

- a) Societal climate for free discussion and exchange;
- b) Diversity, sustainability and independence of media channels;
- c) Professional standards amongst media practitioners; and
- d) Independence, effectiveness and transparency of public broadcasting services.

The qualitative analysis suggested that incorporating an additional indicator that considered the regulatory framework would further strengthen the initial set of proposed indicators. Accordingly a fifth indicator will be added to the set as follows:

Media (on/off-line) regulatory frameworks.

As a reminder, the information earlier provided on the Freedom of Expression construct is presented below.

Knowledge societies are characterized by their reliance on information and knowledge for societal development. Freedom of expression is essential for the dissemination, questioning/debating, comparison, validation and absorption of knowledge as well as the creation of new information and knowledge (UNESCO, 2005). Without freedom of expression the exchange of views is not encouraged and without this dialogue there can be no sharing of knowledge.

A diversity of views and perspectives ensures that citizens are well informed of developments, have a more holistic understanding of the issues that impact their lives and are adequately prepared to exercise their rights and responsibilities within their societies (UNESCO, 2005; Valcke, 2009). A mix of media ownership models – community based, for-profit, public broadcasters etc. - can also ensure that values other than economic ones determine what information is shared and the editorial choices that are made (Peters, 2010; UNESCO, 2010).

To adequately conduct their role of creating a space for public discussion, facilitating the flow of quality information on relevant issues and serving as a check on the abuse of power by the powerful, it is essential for media practitioners to receive adequate professional preparation to develop the skills needed to undertake these tasks (Peters, 2010, Trappel and Maniglo, 2009).

As part of their international obligations, states are to create an enabling environment for the media including the provision of national-wide service coverage. Within this mandate, States are to establish national broadcast and information policies as well as a regulatory framework that supports the

dissemination of diverse viewpoints and supports a public broadcasting service function that is free from political as well as commercial influences and pressure (Banerjee & Seneviratne, 2005; OHCHR, 2012; UNESCO & World Radio and Television Council, 2001).

*** 19. Taken together as a group, in your view, how adequately does the revised set of five indicators serve as proxies for assessing Freedom of Expression in the city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 20. Please arrange the revised set of indicators in terms of your perceived importance of their ability to assess the climate/environment for Freedom of Expression in the city [1 - most important, 5 - least important].**

<input type="checkbox"/>	<input type="checkbox"/>	Societal climate for free discussion and exchange
<input type="checkbox"/>	<input type="checkbox"/>	Diversity, sustainability and independence of media channels
<input type="checkbox"/>	<input type="checkbox"/>	Professional standards amongst media practitioners
<input type="checkbox"/>	<input type="checkbox"/>	Independence, effectiveness and transparency of public broadcasting services
<input type="checkbox"/>	<input type="checkbox"/>	Media (on/off-line) regulatory frameworks

21. Optional - Please provide your comments on this construct

Round Two: Delphi Study - Validating a Knowledge City Maturity Model

11. Universal Access to Information and Knowledge

Both the qualitative and quantitative (56.3 %) analysis revealed a lack of consensus for this indicator set.

Accordingly, Delphi panel is requested to rank the following set of 7 indicators on the basis of their role in helping to assess the Universal Access to Information and Knowledge construct. These indicators are selected from the initial proposed set and recommendations from the panel. On this basis, the top 5 ranked indicators will be identified.

- i) Adequacy and accessibility of the public transportation system;
- ii) Availability of on-line access to government services;
- iii) Efforts to build human capacity to use ICT;
- iv) Affordability, accessibility and safety of Internet services;
- v) Access to reliable and affordable power supply;
- vi) Support for traditional/local knowledge (preservation, valorization and use);
- vii) Presence of knowledge clusters (local/regional) and communities of practice.

As a reminder, the information earlier provided on this construct is presented below.

The digital divide is the difference in ability between countries, within countries and between individuals, to access, use and benefit from information and knowledge flows facilitated by ICT (Campbell, 2001; Bhatia, 2001; Lu, 2001; Schlichter & Danylchenko, 2014). The removal of infrastructural barriers and the development of the necessary human capacities are required to overcome the digital divide.

Rapid urbanization and the dominant urban spatial forms which appear to promote dependence on cars, points to the importance of public transportation systems as an important enabler in allowing all citizens to meet and to build social networks, to access opportunities, goods and services (Gray et al., 2006; Lamont et al., 2013; Mees, 2010; Jenkins, 2013; Sietchiping, et al. 2012; UN-HABITAT, 2009).

At the United Nations' World Summit on the Information Society (WSIS) held in 2003 and 2005, Governments were mandated to develop “e-government strategies... for strengthening relationships with citizens” (<http://www.itu.int/wsis/docs/geneva/official/poa.html#c7-15>). Governments committed to develop infrastructure to support the internal connectivity of government departments and to enable citizens – including developing human capacities - to electronically interact with governments.

* 22. Please arrange the revised set of indicators in terms of your perceived importance of their ability to assess Universal Access to Information in the city [1 - most important, 7 - least important].

<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> </div>	Adequacy and accessibility of the public transportation system;
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> </div>	Availability of on-line access to government services;
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> </div>	Efforts to build human capacity to use ICT;
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> </div>	Affordability, accessibility and safety of Internet services;
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> </div>	Access to reliable and affordable power supply;
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> </div>	Support for traditional/local knowledge (preservation, valorization and use);
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> </div>	Presence of knowledge clusters (local/regional) and communities of practice

23. Optional - Please provide your comments on this construct

Round Two: Delphi Study - Validating a Knowledge City Maturity Model

12. Cultural & Linguistic Diversity

A fairly high level of support (71.9 %) was expressed for the initial set of indicators proposed by the researcher:

- a) Extent of support for the city's breadth of heritage and cultural expressions;
- b) Fostering and promotion of multilingualism; and
- c) Recognition and promotion of cultural industries.

The Delphi panel recommended that the indicator "Extent of support for the city's breadth of heritage and cultural expressions" be disaggregated into two indicators that considered support in terms of preservation and capacity-building of cultural heritage and cultural expressions. In addition, given the importance of the use and practice of languages and cultures within the daily life for their ongoing relevance and survival, the Delphi panel proposed an indicator that considered the presence of local cultures and languages in both on-line and off-line media. This resulted in the following expanded indicator set:

- i) Level of cultural heritage preservation efforts
- ii) Level of capacity building in cultural expression sector
- iii) Fostering and promotion of multilingualism
- iv) Recognition and promotion of cultural industries
- v) Presence of local culture and languages in digital media

As a reminder, the information earlier provided on this construct is presented below.

Globalization is increasing the heterogeneity of societies bringing together new groups, new ideas and creating opportunities for new ideas, creative expression and innovation. Stock (2011) cites a study by Nathan & Low (2010) in London, which found correlations for firms engaged in knowledge intensive activities between innovativeness and the diversity of their workforce. According to Johnstone (2002), multilingual persons exhibit higher levels of creativity than monolingual ones, as judged on their performance across a range of aptitude tests that assess skills in areas such as divergent thinking and cognitive flexibility that are positively correlated with creativity. In an information and knowledge society where knowledge and information creation are drivers of economic production, linguistically diverse cultures should display superior problem-solving and economic performance (Johnstone, 2002; Skutnabb-Kangas, 2002).

Looseley (2004) points to practices where some States only promote "high culture", that is to say cultural expressions and heritage that is considered as "professionally produced excellence in the traditional arts and heritage that reflects and embodies intellectual rigor". These efforts produce what

authors like Burri (2013) and Pyykkönen (2012) refer to as cultural imperialism in which legitimacy is attributed only to a narrow range of a city or nation's cultural expressions, heritage and the individuals who are able to appreciate them. This view embeds implicit and sometimes explicit social exclusionary and normative markers of quality, virtue and value (Clements, 2006; Hill, 2004) which leads to the languishing of important aspects and sources of cultural value.

UNESCO's Convention on the Protection and Promotion of the Diversity of Cultural Expressions is an internationally binding legal instrument which entered into force in March 2007. Amongst other aspects the Convention seeks to effectively address the two independent roles played by cultural activities, goods and services as i. transmitters of cultural identity, value and meaning, as well as ii. carriers of economic and commercial value. The UNESCO Convention seeks to enhance the role of cultural expressions as a source of economic dynamism for communities. This approach also recognizes that the survival of cultural expressions is tied to their ability to become part of the daily life.

*** 24. Taken together as a group, in your view, how adequately does the revised indicator set serve as proxies for assessing the Cultural & Linguistic Diversity of the city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 25. Please arrange the revised indicators in terms of your perceived importance of their ability to assess the Cultural & Linguistic Diversity of the city [1 - most important, 5 - least important].**

<input type="text"/>	Level of cultural heritage preservation efforts
<input type="text"/>	Level of capacity building in cultural expression sector
<input type="text"/>	Fostering and promotion of multilingualism
<input type="text"/>	Recognition and promotion of cultural industries
<input type="text"/>	Presence of local culture and languages in digital media

26. Optional - Please provide your comments on this construct

Round Two: Delphi Study - Validating a Knowledge City Maturity Model

13. Education for All

75.0% of Delphi panelists expressed satisfaction with the initial set of indicators that were proposed:

- a) Ability of the city to nurture its human talent;
- b) Ability to attract and retain talent;
- c) Support for global citizenship education (intercultural competence); and
- d) Efforts to enhance citizens' media and information literacy (digital literacy).

The Delphi panel recommended that an additional indicator that considered inter-generational knowledge flows be added to the initial set. Consequently the revised indicator set consists of:

- i) Ability of the city to nurture its human talent
- ii) Ability to attract and retain talent
- iii) Support for global citizenship education (intercultural competence
- iv) Efforts to enhance citizens' media and information literacy (digital literacy)
- v) Support for inter-generational transfer of traditional and local knowledge.

As a reminder, the information earlier provided on this construct is presented below.

Education is the principal contributor to the development of human capital (Blaug, 1976; Gamerschlag, 2013; Keeley, 2007; UNESCO, 2005). Human capital theory sees the development of human capital as the key driver of economic growth, so in the knowledge society, education is crucial for economic growth (Becker, 1964, Gilles, 2011). The quality of educational processes and the ability to create knowledge relevant to the problems the society needs to solve will determine the immediate value of this human capital. Mastering learning to learn, ensures longer term relevance and enables individuals and societies to be more successful in navigating changes.

In the globalized, highly mobile work environment, cities compete to attract and retain the human capital critical to their success (Činčikaitė & Paliulis, 2013; OECD, 2005; Singhal et al., 2013; Yigitcanlar et al., 2007; Yigitcanlar & Lönnqvist, 2013). Yigitcanlar et al. (2007) identify factors such as quality childcare and education for school age children, cultural amenities, affordable housing and private healthcare as particularly important to knowledge workers.

The role of cities as connecting points between nations, cross-roads for trade, tourism destinations and global magnets for human capital point to the importance of the multicultural skills of citizens to support these networks (Scott, 2008; OECD, 2013). Working in a multicultural environment involves linguistic skills, cognitive and affective attitudes, behaviors and judgment, collectively referred to as intercultural competencies (Bazgan & Popa, 2014).

ICT systems and Internet infrastructure enables the flow of information, knowledge goods and services across global networks. The ability of its citizenry to participate in these networks determines the city's ability to be effective and efficient nodes in this global network architecture.

*** 27. Taken together as a group, in your view, how adequately does the revised set of indicators serve as proxies for assessing the Education for All construct within the city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 28. Please arrange the proposed indicators in terms of your perceived importance of their ability to assess the Education for All Construct of the city [1 - most important, 4 - least important].**

<input type="checkbox"/>	<input type="checkbox"/>	Ability of the city to nurture its human talent
<input type="checkbox"/>	<input type="checkbox"/>	Ability to attract and retain talent
<input type="checkbox"/>	<input type="checkbox"/>	Support for global citizenship education (intercultural competence
<input type="checkbox"/>	<input type="checkbox"/>	Efforts to enhance citizens' media and information literacy (digital literacy)
<input type="checkbox"/>	<input type="checkbox"/>	Support for inter-generational transfer of traditional and local knowledge.

29. Optional - Please provide your comments on this construct

Round Two: Delphi Study - Validating a Knowledge City Maturity Model

14. Your Professional Insights and Perspectives

Your professional insights and perspectives on the following questions would be particularly useful for policy-makers and actors involved in supporting development actions in the cities of the developing world.

- * 30. In your view what do you consider to be the most pressing challenges that policy-makers in the developing countries would need to overcome in order to pursue a knowledge-based development strategy?**

- * 31. What processes, approaches, strategies or resources are needed to overcome the challenges you mentioned in the earlier question?**

- * 32. In what way is the revised knowledge-based development model relevant to the challenges and solution strategies you have outlined?**

Round 3 Questionnaire

Round Three: Delphi Study - Validating a Knowledge City Maturity Model_3

1. Welcome and Overview

Welcome to Round 3 of this Delphi Study on knowledge-based development which seeks to make UNESCO's Knowledge Societies Conceptual Framework measurable and operational in cities of the developing world.

My name is Paul Hector and I would like to thank you for your interest in the research I am conducting within the framework of the dual-degree doctoral Program at the Telecom Ecole de Management (France) and Bangkok University (Thailand).

This Round will seek to achieve consensus on the Knowledge-based Development Model as well as for the indicator sets for Equity, Universal Access and Education for All.

It would be greatly appreciated if you could submit your completed questionnaire no later than Sunday 23 August, 2015.

As in the first and second Rounds:

** Your responses are automatically saved, you can use the back and forward buttons to go between pages if you want to change any of your responses**

** If you close the browser just click on the invitation link to resume where you left off. **

Your interest and contribution to this study is greatly appreciated and I look forward to receiving your inputs very soon.

*** 1. Did you participate in either Round 1 or Round 2 of this Delphi study?**

☐

Yes ☐

No

Round Three: Delphi Study - Validating a Knowledge City Maturity Model_3

2.

My name is Paul Hector and I would like to thank you for your interest in the research I am conducting within the framework of the dual-degree doctoral Program at the Telecom Ecole de Management (France) and Bangkok University (Thailand).

Both universities seek to ensure that all research conducted by their students follow international best practices. As part of this policy, I am required to explain to you your rights as a participant in this research process and explain how the information you provide will be used.

This Delphi study will be conducted for a maximum of 4 rounds.

Your participation in this Delphi study is confidential and voluntary. Confidentiality means that no information which allows specific comments to be linked to you will be shared with others without your permission. Voluntary means you are fully able to exercise control over the extent of your participation in this study.

The data collected during this Delphi study will inform my doctoral dissertation and the preparation of related academic papers.

Your contribution to this Delphi study may be acknowledged in a list of contributors.

If you wish, the key findings of this study and resulting academic papers may be sent to you.

*** 2. The purpose and conduct of this research study has been explained to me. I willingly agree to participate in this interview and to have my contributions captured, stored and processed.**

☐

Yes ☐

No

Other (please specify)

*** 3. May your name be included in the list of Panelists?**

☐

Yes ☐

No

*** 4. Would you like a copy of the final study and/or any academic papers that may result from this Delphi study?**

☐

☐ Yes

s

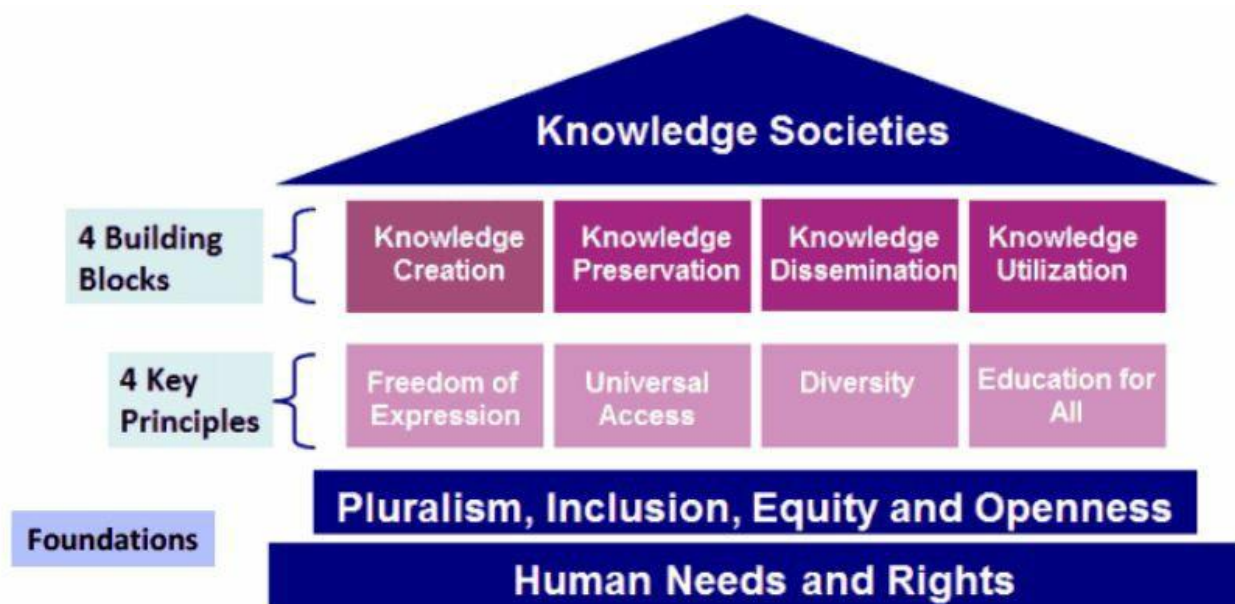
No

Round Three: Delphi Study - Validating a Knowledge City Maturity Model_3

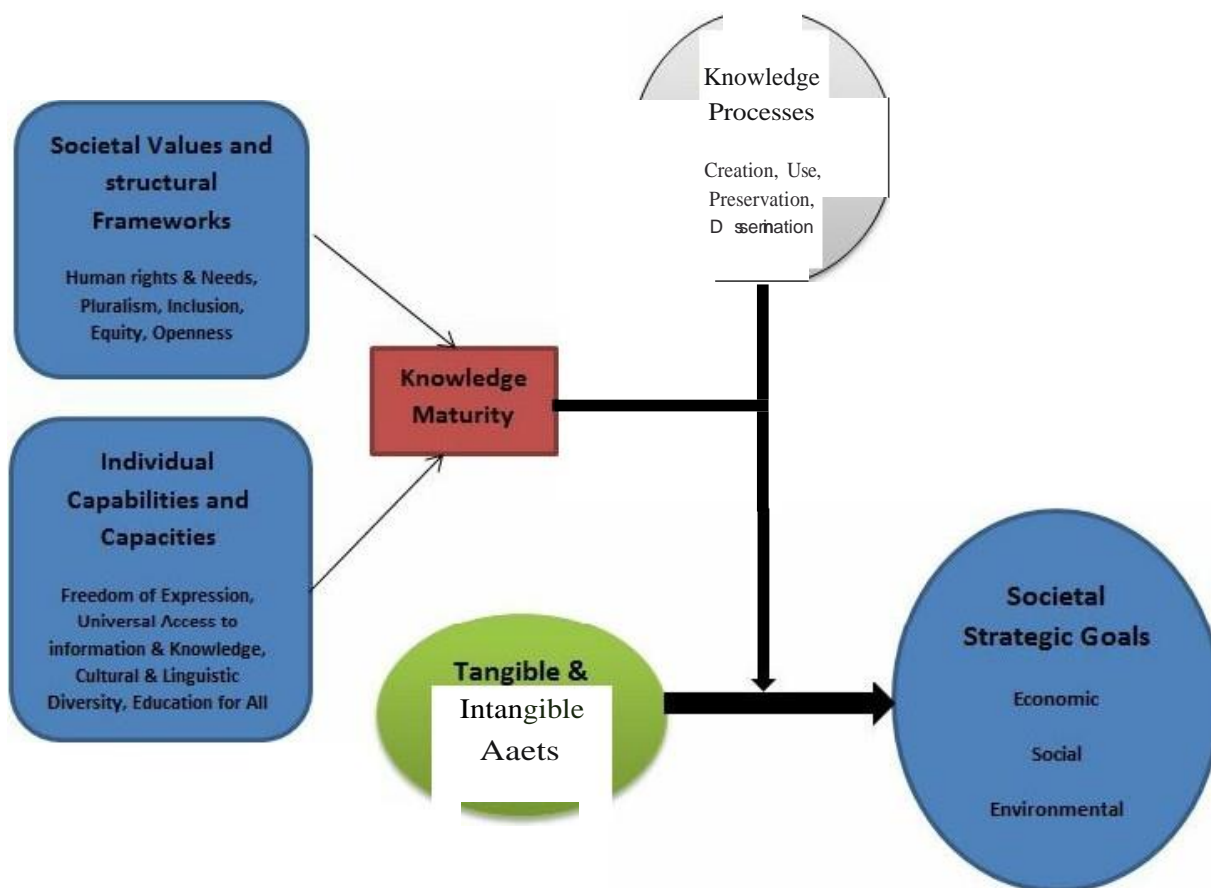
3. UNESCO's Framework and the Proposed Knowledge-based Development Model

Below is UNESCO's Knowledge Societies Conceptual Framework, the Proposed Knowledge-based Development Model presented in Round 1.

UNESCO Knowledge Societies Conceptual Framework



Knowledge-based Development Model Presented in Round 1



Round Three: Delphi Study - Validating a Knowledge City Maturity Model_3

4. Revised Knowledge-based Development Model Resulting from Round 1

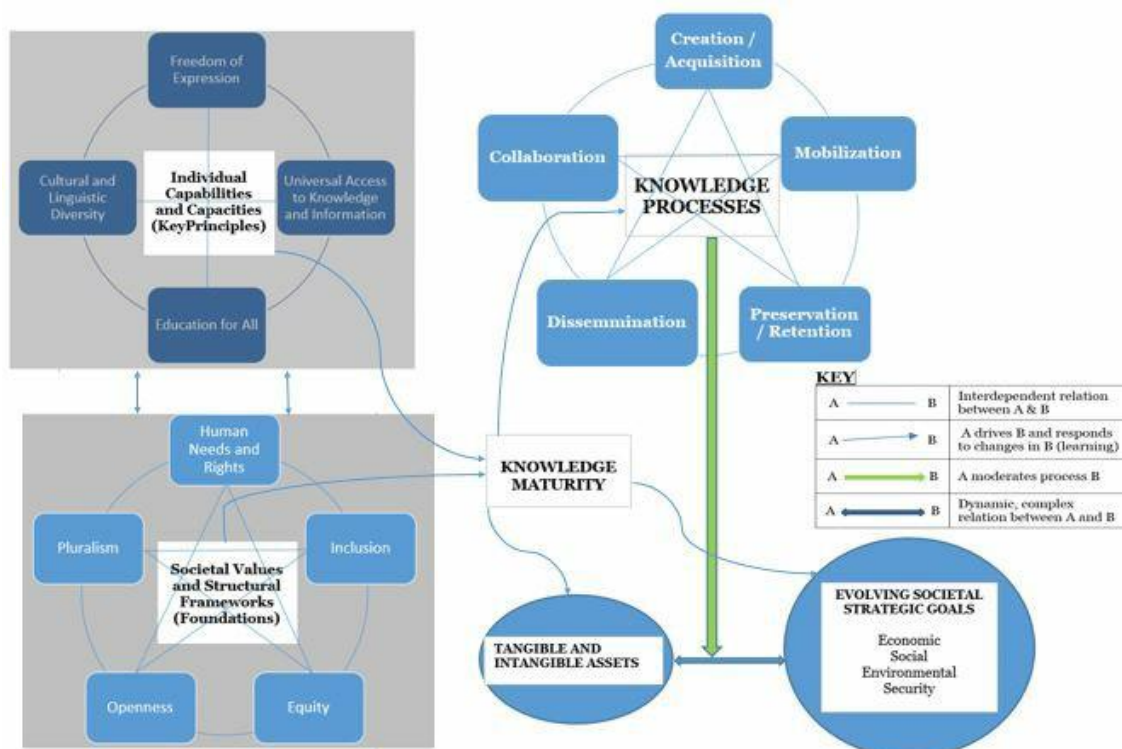
In Round 2 of the Delphi study 92.1% of panelists agreed that the revised Knowledge-based Development Model captured the concepts in UNESCO's Knowledge Societies Conceptual Framework.

In addition, 84.2% of panelists expressed satisfaction with the model's representation of the role of knowledge in driving and supporting development from a big-picture or macro-level perspective.

Below is the revised Knowledge-based Development Model that takes into account the comments received during Round 2 of the Delphi panel.

Please use "CTRL" & "+" to increase the image size; "CTRL" & "-" will allow you decrease the image size.

Revised Knowledge-based Development Model After Round 2.



*** 5. From a big-picture or macro-level policy perspective how do you assess the revised Knowledge-based Development Model's representation of the role of knowledge in driving/supporting development?**

Strongly disagree

Disagree

Neutral

Agree

Strongly Agree



6. Optional - Please provide any comments you may have on the revised model.

Round Three: Delphi Study - Validating a Knowledge City Maturity Model_3

5. Inclusion

Consensus was achieved for this construct with 94.7% of Delphi panelists in Round 2 expressing satisfaction with the revised set of indicators:

- a) Access to safe and decent work opportunities
- b) Level of support for the participation of vulnerable groups (women, youth, persons with disabilities) in economic activities
- c) Access to basic social services (health care, shelter, primary and secondary education etc)
- d) Access to civic and political space
- e) Access to credit/training (Level of support for entrepreneurial activity)

The qualitative analysis revealed that several panelists recommended that aged and retired persons be included in the group of vulnerable persons.

Consequently this indicator/criteria becomes:

- b) Level of support for the participation of vulnerable groups (women, youth, persons with disabilities, the elderly and retired) in economic activities

*** 7. Do you agree with the proposal to include the aged and retired into the group of vulnerable persons?**

☐

Yes ☐

No

8. Optional - Please provide any additional comments you may have on this construct

Round Three: Delphi Study - Validating a Knowledge City Maturity Model_3

6. Equity

In Round 1, 75.0% of Delphi panelists expressed satisfaction with the initial set of indicators that were proposed. On the basis of the comments received a 5th indicator/criteria was to be selected from amongst three new proposals by panelists during Round 2.

The qualitative analysis of the inputs from Round 2 indicated support for indicators/criteria related to reproductive services and for property ownership. Reproductive services will be included under the existing indicator/criterion for basic social services, while a separate indicator/criterion for property ownership (land and housing) will be formulated. The new indicator set is as follows:

- a) Access to basic social services including reproductive services
- b) Evenness in the distribution of social costs and benefits
- c) Gender mainstreaming in public policies
- d) Adequate communication and fair access to social services and goods
- e) Access to property ownership (land and housing) and security of tenure

*** 9. Taken together as a group, in your view, how adequately does the revised set of five (5) indicators serve as proxies for assessing the level of Equity in the city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Optional - Please provide any comments you may have on this construct

Round Three: Delphi Study - Validating a Knowledge City Maturity Model_3

7. Openness

Consensus was achieved with 89.2% of panelists in Round 2 expressing support for the revised set of indicators/criteria that had been proposed for this construct.

The qualitative analysis however highlighted the importance of addressing intellectual property rights (IPR) and an indicator/criteria formulated to assess efforts in the city to balance public and private (rights-holders) IPR interests and to develop the public domain. The revised indicator set now consists of:

- a) Willingness to explore unconventional approaches to solving societal challenges
- b) Promotion of open standards
- c) Transparency in public policy/decision-making processes
- d) Participation in public policy/decision-making processes
- e) Protection of personal privacy and personal data
- f) Promoting an equitable balance between public and private interests in IPR and developing the public domain.

*** 11. 8. Do you agree with the proposal to include an indicator/criterion for intellectual property rights under this construct?**

☐

Yes ☐

No

12. Optional - Please provide any additional comments you may have on this construct.

Round Three: Delphi Study - Validating a Knowledge City Maturity Model_3

8. Universal Access to Information and Knowledge

In Round 2 panelists reaffirmed their interest in this construct and retained all 7 proposed indicators/criteria.

The qualitative analysis indicated that the role of public libraries and archives had been overlooked. These have now been incorporated into the indicator for knowledge clusters as follows:

f) Presence of local and regional knowledge clusters (including communities of practice, libraries, archives and universities)

The updated indicator set to be assessed in Round 3 is as follows:

- a) Affordability, accessibility and safety of Internet services;
- b) Efforts to build human capacity to use ICT;
- c) Access to reliable and affordable power supply;
- d) Availability of on-line access to government services;
- e) Adequacy and accessibility of the public transportation system;
- f) Presence of local and regional knowledge clusters (including communities of practice, libraries, archives and universities);
- g) Support for traditional/local knowledge (preservation, valorization and mobilization).

*** 13. Taken together as a group, in your view, how adequately does the revised set of seven (7) indicators serve as proxies for assessing the Universal Access to Information construct in the city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. Optional - Please provide your comments on this construct

Round Three: Delphi Study - Validating a Knowledge City Maturity Model_3

9. Education for All

86.5% of Delphi panelists in Round 2 expressed satisfaction with the revised set of indicators proposed.

The qualitative analysis revealed that some panelists were unclear about what was meant by nurturing human talent. There were also reservations concerning the lack of direct reference to formal educational systems or schools.

Nurturing human talent relates to the process of enabling individuals, throughout their life, to realize their own unique potential, to enable them to develop the personal, inter-personal attitudes and skills to engage in and contribute to the governance and functioning of their society, to develop their awareness, thinking and communication skills and to effectively respond to change. Nurturing talent involves a variety of settings and modes for creating, shaping and facilitating opportunities for learning experiences and reflection that may be formal (e.g. schools), informal (e.g. community and civic centers) or blends. Nurturing talent involves supporting learning through a blend of formal (e.g. schools) as well as informal (community & civic centers) settings for shaping and delivering learning experiences and creating opportunities for reflection.

- a) Ability of the city to nurture its human talent (through formal school settings, informal structures and civic spaces);
- b) Ability to attract and retain talent
- c) Support for global citizenship education (intercultural competence
- d) Efforts to enhance citizens' media and information literacy (digital literacy)
- e) Support for inter-generational transfer of traditional and local knowledge. Ability to attract and retain talent;
- c) Support for global citizenship education (intercultural competence); and
- d) Efforts to enhance citizens' media and information literacy (digital literacy).

*** 15. In light of the above clarifications, how adequately does the revised set of indicators/criteria serve as proxies for assessing the Education for All construct within the city?**

Very Poor	Poor	Fair	Good	Very Good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. Optional - Please provide any comments you may have on this construct.

Round Three: Delphi Study - Validating a Knowledge City Maturity Model_3

10. Your Professional Insights and Perspectives

Your professional insights and perspectives on the following questions would be particularly helpful and very much appreciated in supporting the subsequent phases of this study.

- * 17. During the last 5 years have you lived or worked in a city of a developing country in Africa or Asia? If so, please indicate the name of the city or cities.**

A list of developing countries is available at the following link: <http://www.isi-web.org/component/content/article/5-root/root/81-developing>

☐

Yes ☐

No

Other (please specify)

Round Three: Delphi Study - Validating a Knowledge City Maturity Model_3

11. Your Professional Insights and Perspectives Cont'd

Your professional insights and perspectives on the following questions would be particularly helpful and very much appreciated in supporting the subsequent phases of this study.

I thank you in advance for providing as specific and complete responses as you are able to the following questions:

- * **18. Please indicate up to 3 urgent challenges that impact the environmental, economic or social development in the city that you have named and which you think threaten its future growth and development? If you mentioned more than one city, please focus on the one with which you are most familiar.**

- * **19. For the challenge that you consider to be most critical or urgent, what do you feel are its main / root causes?**

- * **20. For the most urgent challenge you identified, who are the key stakeholder groups that need to be involved to successfully respond to this challenge? What/how do you expect each stakeholder could contribute?**

- * **21. Briefly describe any existing collaboration or conflict between the stakeholders you identified?**

Round Three: Delphi Study - Validating a Knowledge City Maturity Model_3

12. Your Professional Insights and Perspectives Cont'd

Your professional insights and perspectives on the following questions would be particularly helpful and very much appreciated in supporting the subsequent phases of this study.

I thank you in advance for providing as specific and complete responses as you are able to the following questions:

- * 22. Are there any specific advantages (cultural, location, reputation, specific knowledge / experiences, partnerships etc.) that the city can draw on to mitigate / overcome / resolve the challenge you identified?**

- * 23. Are there any specific circumstances or mindsets that may need to be confronted in order to address/resolve the challenge that you identified (Please be as specific as possible)?**

- * 24. Are there any efforts currently underway to address the challenge you identified? In your view how could the constructs that contribute to individual capacities and capabilities as well as societal values and frameworks contribute to this process?**

- * 25. What information and processes do you think could enable stakeholders to develop responses for overcoming / mitigating / resolving the challenge you identified?**

Round Three: Delphi Study - Validating a Knowledge City Maturity Model_3

13.

*** 26. Dear Panelists,**

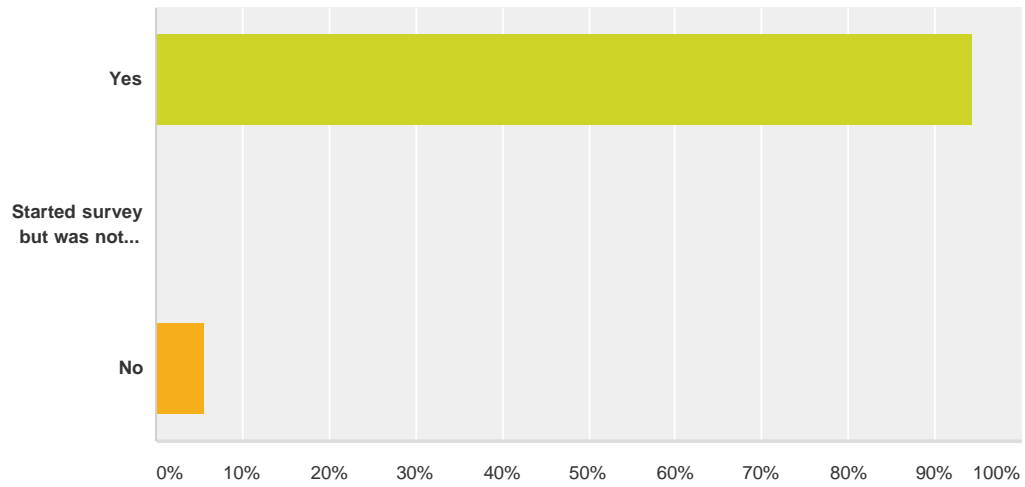
I would like to thank you once more for your participation and contribution to this Delphi Survey and for your kind assistance in refining the knowledge-based development model and identifying relevant indicators/criteria.

Kindly take a moment to share with me any feedback, learning, insights or suggestions that have occurred as a result of your participation in this Delphi study.

DATA COLLECTED FROM ROUND THREE

Q1 Did you participate in either Round 1 or Round 2 of this Delphi study?

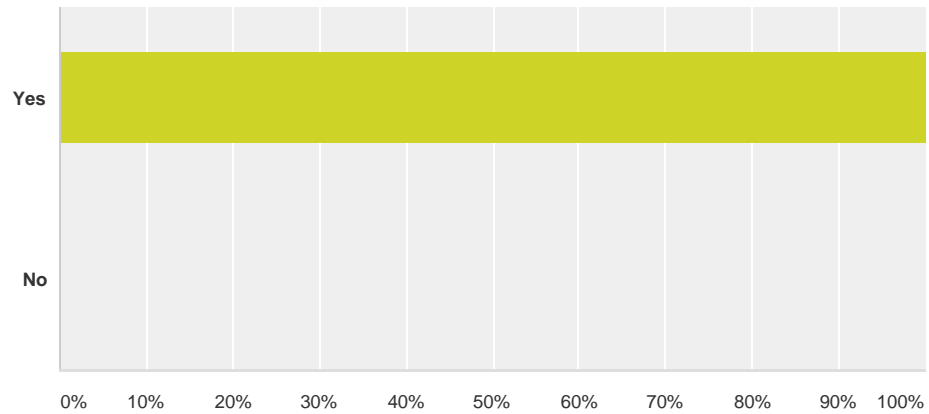
Answered: 35 Skipped: 0



Answer Choices	Responses	
Yes	94.29%	33
Started survey but was not able to complete it	0.00%	0
No	5.71%	2
Total		35

Q2 The purpose and conduct of this research study has been explained to me. I willingly agree to participate in this interview and to have my contributions captured, stored and processed.

Answered: 2 Skipped: 33

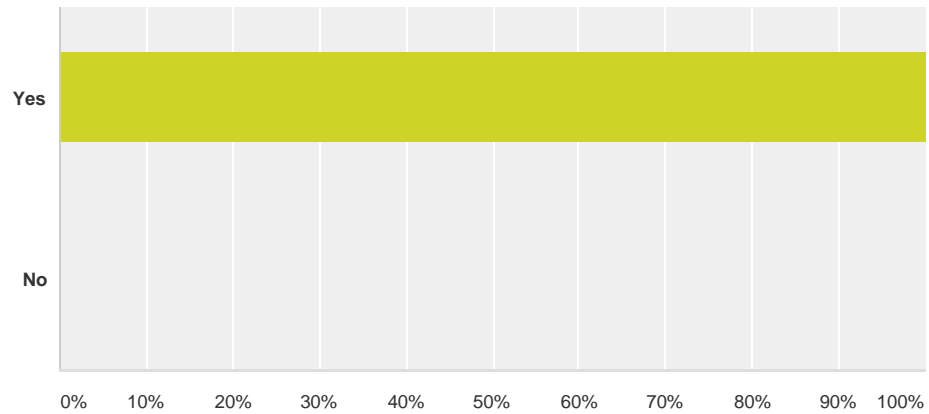


Answer Choices	Responses
Yes	100.00% 2
No	0.00% 0
Total	2

#	Other (please specify)	Date
	There are no responses.	

Q3 May your name be included in the list of Panelists?

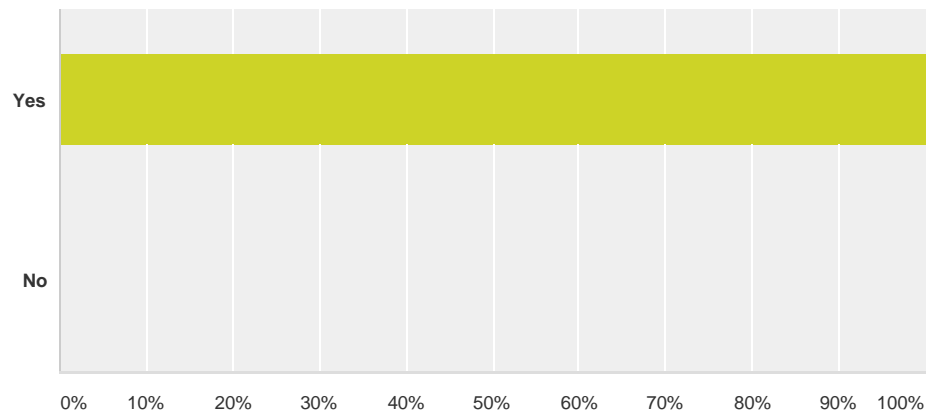
Answered: 2 Skipped: 33



Answer Choices	Responses
Yes	100.00% 2
No	0.00% 0
Total	2

Q4 Would you like a copy of the final study and/or any academic papers that may result from this Delphi study?

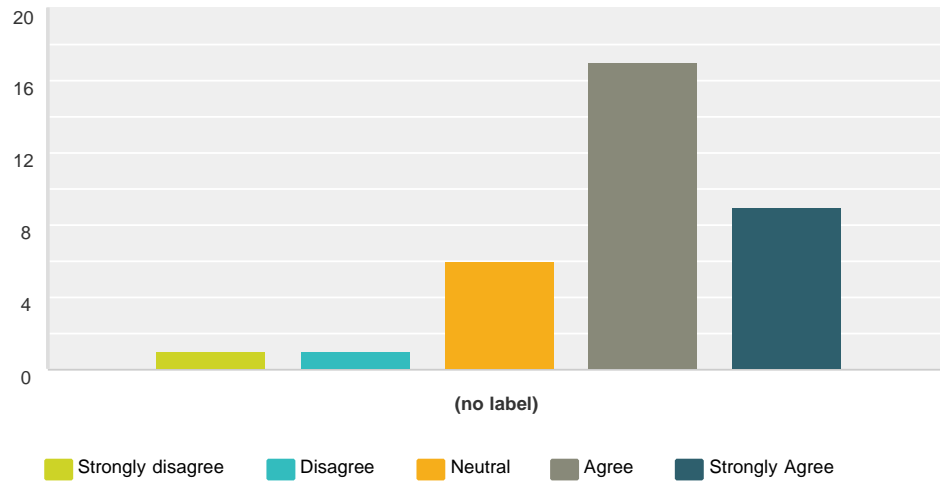
Answered: 2 Skipped: 33



Answer Choices	Responses
Yes	100.00% 2
No	0.00% 0
Total	2

Q5 From a big-picture or macro-level policy perspective how do you assess the revised Knowledge-based Development Model's representation of the role of knowledge in driving/supporting development?

Answered: 34 Skipped: 1



	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Total	Weighted Average
(no label)	2.94% 1	2.94% 1	17.65% 6	50.00% 17	26.47% 9	34	3.94

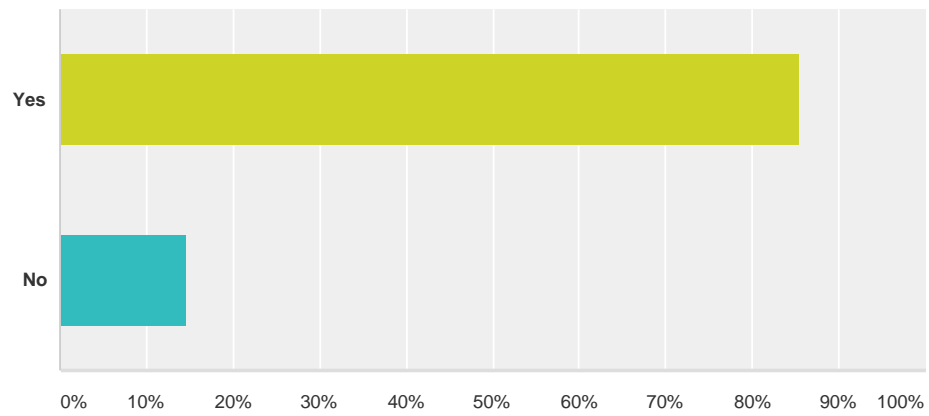
Q6 Optional - Please provide any comments you may have on the revised model.

Answered: 15 Skipped: 20

#	Responses	Date
1	The mismatch between the rating and the question is an issue. Better use strongly representing	9/3/2015 8:53 AM
2	I am a bit concerned that the model mainly supports UNESCO's view formulated within the organisation's mandate, and not other factors leading to the development of assets and achievement of societal goals -eg war vs peace, trade & exchange vs isolation, change & development vs stagnation/conservatism.	8/23/2015 8:47 PM
3	I believe that there is merit in viewing "Wisdom" as an outcome of "Knowledge Maturity".	8/23/2015 7:41 PM
4	I think this scheme should be simplified	8/23/2015 6:15 PM
5	The issues and relationships are accurate, but the model is becoming a bit complicated for non-academic stakeholders to easily understand	8/23/2015 2:42 PM
6	If I am not mistaken, in previous documentation you spoke about knowledge maturity as facilitating the role of knowledge processes in transforming tangible & intangible assets into strategic development. The original diagram was clear on this relation, but now the little blue arrows all over the place (like directly between knowledge maturity and assets and goals) greatly confuse the presentation. Also, by "Evolving Societal Strategic Goals", do you mean the elaboration of these goals or their achievement - these are two entirely different things, the former part of a planning process and the latter part of a development process.	8/23/2015 12:16 PM
7	Although the graphic is kinda 'busy'.	8/22/2015 6:52 PM
8	Perhaps discuss issue on whether model is too idealistic?	8/22/2015 5:35 PM
9	I still have trouble in understanding the functional relationships implied in the model: ¿are the knowledge maturity intervening variables and both, assets and societal goals parallel sets of dependent variables?	8/22/2015 3:39 PM
10	I am not just sure if the arrows have to be uni-directional in some of the items in the framework. For example, does knowledge maturity feed into knowledge processes? Or is it the other way around? Also, there are connections between concepts that may need to be explicit. For example, knowledge processes may have an effect on individual capacities as well as societal values and structural frameworks. I just thought that a level of complexity seem not to be recognized by the current framework.	8/22/2015 3:22 PM
11	What I understand with the model is: 1) The source of information for the "Knowledge Maturity Model" are the "Individual Capabilities and Capacities" and the "Societal Values and Structural Framework" of each society. 2) With that in mind, the "Knowledge Maturity Model" evaluates the "Tangible and Intangible assets", the "Knowledge processes" that use/create them and the results embedded in the "Evolving societal strategic goals".	8/21/2015 3:58 PM
12	I like to see the connections via the connecting lines, it makes it more complete.	8/19/2015 8:23 AM
13	Perhaps the concept of "development" deserves further elaboration.	8/19/2015 3:52 AM
14	I agreed. But I think that the relation between the knowledge Maturity and tangible and intangible assets, evolving societal, strategic goals is a redundancy. In addition it seems that knowledge maturity could produce tangible and intangible assets, and evolving societal, strategic goals without knowledge processes which I think that it is a little bit confuse.	8/15/2015 4:13 PM
15	The diagram captures key issues, but has now become very complex and difficult to follow. More importantly, as it has become more complex, it has become subject to much greater interpretation by the reader/viewer, which is potentially problematic. I would suggest that the author considers simplifying the diagram and then using text to elucidate key complexities flowing from the diagram.	8/13/2015 8:21 AM

Q7 Do you agree with the proposal to include the aged and retired into the group of vulnerable persons?

Answered: 34 Skipped: 1



Answer Choices	Responses	
Yes	85.29%	29
No	14.71%	5
Total		34

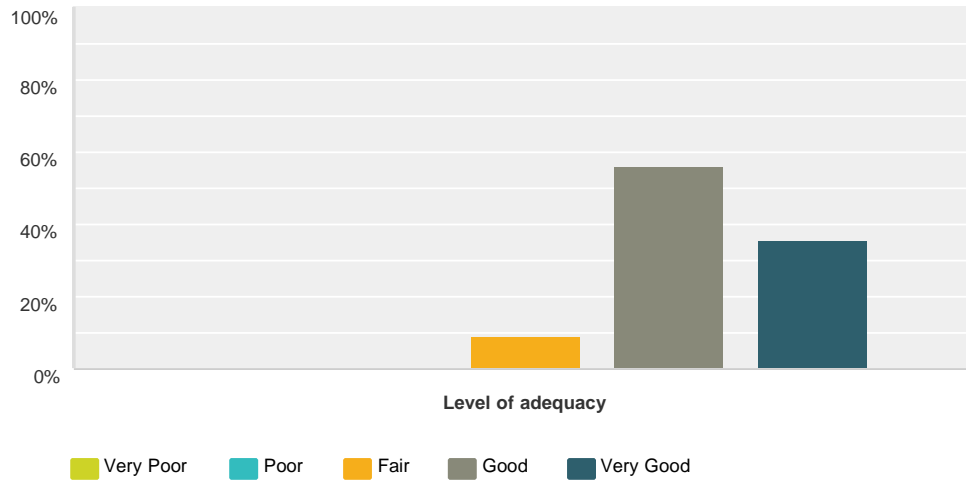
Q8 Optional - Please provide any additional comments you may have on this construct

Answered: 15 Skipped: 20

#	Responses	Date
1	Most of cohorts in this group in the SSA are not included in any social support scheme as of current practice. May be in future	9/3/2015 8:55 AM
2	The aged and retired support in economic activities doesn't add. The society should support them for basics health care and shelter, rather than expect them to earn	8/24/2015 1:13 PM
3	The aged and retired find them selves increasingly marginalized in fast moving/growing economies.	8/24/2015 8:49 AM
4	It is probably a good idea to apply the "Different Needs-Equal Opportunities" formulation. I am not sure if persons with disabilities should be singled out. Then you could also bring in other discriminatory factors: race, cast, religion etc. Again I suspect the model is trying to support UNESCO's current programmes which would be a pity.	8/23/2015 8:55 PM
5	Age is not a factor of vulnerability. Many retired people begin a new life after the first part of their life. A part of them leave their own country to go abroad in order to continue to work, as young people!	8/23/2015 6:36 PM
6	In the near future the target group ' aged and retired' will become increasingly important in many countries (Europe, Japan), and their addressing their anticipated concentration in Knowledge cities will be a real issue for societal prosperity.	8/23/2015 2:44 PM
7	Yes they are vulnerable persons. However, the aged might not be able to participate in economic activity due to ailments and possibly physical or mental inabilities of individuals in that age group	8/23/2015 1:20 AM
8	Vulnerable groups may be different in cities depending on context.	8/22/2015 5:38 PM
9	Just thinking aloud whether indigenous people belong to the vulnerable groups category.	8/22/2015 3:23 PM
10	I think that elderly must be included given that social security for the elderly and retired persons are not common in Latin America. They live accordingly to their sons' willingness.	8/21/2015 4:01 PM
11	However inclusion of "retired" is questionable/faulty since not all retirees are vulnerable.	8/19/2015 8:24 AM
12	Perhaps, elderly and retired people should constitute a separate category given their specificity. In principal, they are not "marginalized", since in general elderly and retired people have had some activi participation in the society. They also are not "excluded" from opporunities.	8/19/2015 3:55 AM
13	I agree that aged and retired can be a group of vulnerable person. But (in the developed world) the aged become vulnerable person, half of the society will be vulnerable. There are a lot of problems and challenges in the life of aged (health, loneliness, money etc.) but there are solutions for them, a lot of ICT tools, too. Secondly, the aged and retired is a too large and general group. It must be differentiated, any highlighted some sub-groups, for example aged with poor conditions, aged without family, aged with logistical problems what can be solved etc.	8/16/2015 2:33 PM
14	The percentage of people in this group is increasing globally.	8/15/2015 11:28 PM
15	I said yes - because everyone can be a vulnerable or non vulnerable person. It depends on the situation	8/15/2015 4:14 PM

Q9 Taken together as a group, in your view, how adequately does the revised set of five (5) indicators serve as proxies for assessing the level of Equity in the city?

Answered: 34 Skipped: 1



	Very Poor	Poor	Fair	Good	Very Good	Total	Weighted Average
Level of adequacy	0.00% 0	0.00% 0	8.82% 3	55.88% 19	35.29% 12	34	4.26

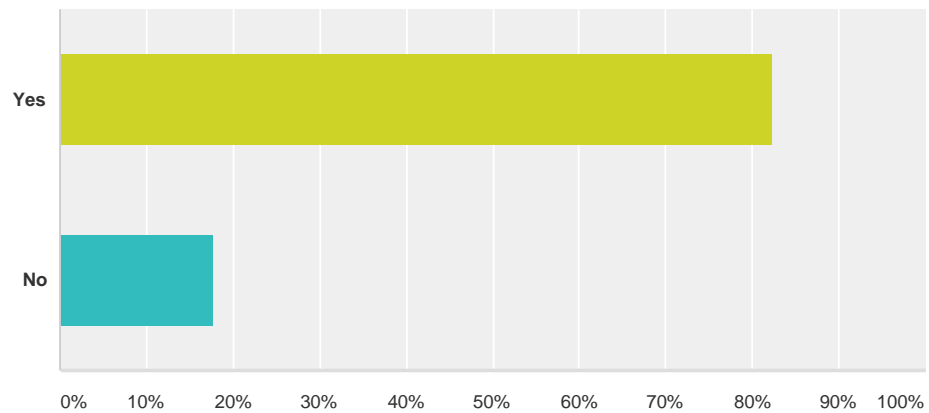
Q10 Optional - Please provide any comments you may have on this construct

Answered: 7 Skipped: 28

#	Responses	Date
1	In the previous section you defined social services as access to basic health care service, primary and secondary education. I think you should add the definition here as well as the quality of the services. For example, indicator d focuses on adequate communication and access but it does not mention the quality of the services and the goods.	8/26/2015 2:51 PM
2	Equity on reproductive services well managed contribute to a healthy society	8/24/2015 1:14 PM
3	There is considerable overlap between the concepts of "inclusion" and "equity" as you use them. If I understand correctly, the main difference is that inclusion considers especially marginalized groups (outliers) and equity the population as a whole. This is OK, but perhaps some more clarification in the explanations would be useful?	8/23/2015 12:19 PM
4	not sure about e) Would access to public space (libraries) falls under d?	8/22/2015 5:44 PM
5	I just wonder how we unpack each of the items above. For example, where is access to jobs, for example?	8/22/2015 3:25 PM
6	I think more could be done but it might make the model too complex or bi-furcated	8/19/2015 1:28 AM
7	I find these 5 indicators very good as this includes the equal access to the basic social services for all	8/15/2015 4:14 PM

Q11 8. Do you agree with the proposal to include an indicator/criterion for intellectual property rights under this construct?

Answered: 34 Skipped: 1



Answer Choices	Responses	
Yes	82.35%	28
No	17.65%	6
Total		34

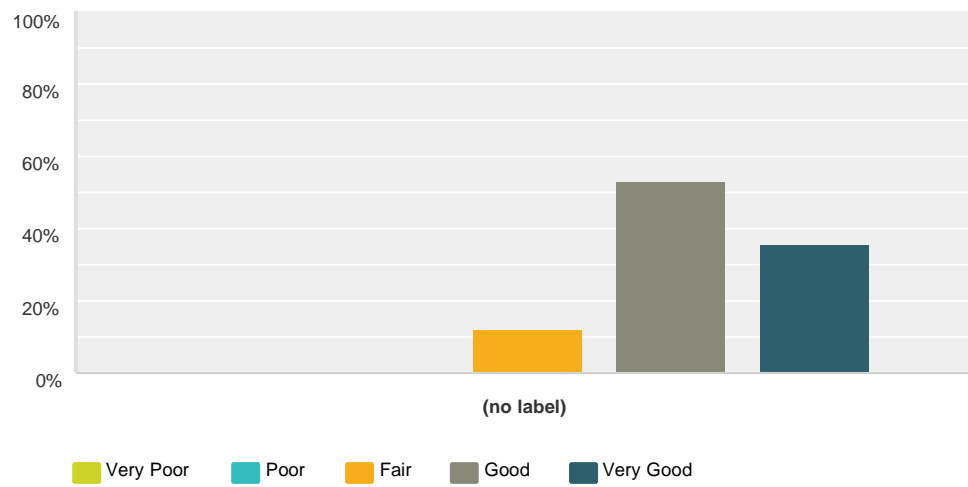
Q12 Optional - Please provide any additional comments you may have on this construct.

Answered: 10 Skipped: 25

#	Responses	Date
1	But the fact that not all play by the rules needs to be considered. Intellectual property rights need to be nuanced with fairness and recognition for universality of human ingenuity.	8/24/2015 8:54 AM
2	Very important	8/23/2015 8:58 PM
3	Consider a different order of criteria. To my mind, (d) and (c) are basic indicators and carry more weight than (a). I would suggest: (b), (d), (c), (a), (e), (f)	8/23/2015 2:54 PM
4	As long as the IPR issues are equitable and considers the creators' right, this gives a good indicator for knowledgeable society.	8/22/2015 8:21 PM
5	What are examples of private interest in IPR of a knowledge city?	8/22/2015 5:53 PM
6	In my personal opinion, it is important to consider property rights but it does not association with "Openness" as it is defined in the construct.	8/21/2015 4:05 PM
7	IPR is a very important topic, since it can contribute both to stimulate info creation, but can also be an obstacle to access to information and social technology use.	8/19/2015 10:04 PM
8	IPR is a very-very important thing. But it is not equal as open standards, transparency, participation etc. Firstly, they are not equal methodology levels, I think. Secondly, the information society made a lot of changes in the field of IPR, but the main areas are still working, maybe better (education, music industry etc.). The role of IPR is crucial in economy and in RD. But in the field of society is only a circumstance.	8/16/2015 2:39 PM
9	I said yes, because I think that intellectual property is very important. e.g. copyright, patents, local culture etc.	8/15/2015 4:18 PM
10	Although I agree in principle, there is a strong case to be made for protection of IPR having predominantly functioned to protect vested social interests and thus contribute to inequality. Thus, I think this is too complex an issue to be included as an indicator.	8/13/2015 8:23 AM

Q13 Level of adequacy

Answered: 34 Skipped: 1



	Very Poor	Poor	Fair	Good	Very Good	Total	Weighted Average
(no label)	0.00%	0.00%	11.76%	52.94%	35.29%	34	4.24
	0	0	4	18	12		

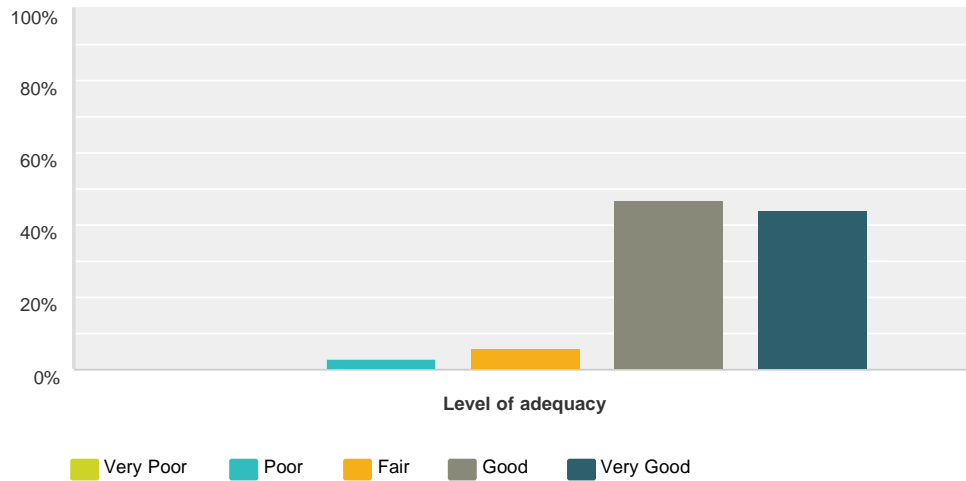
Q14 Optional - Please provide your comments on this construct

Answered: 9 Skipped: 26

#	Responses	Date
1	Must move beyond safety into protection and support to those proved to suffer severe damage resulting to exposure to wifi rays.	9/3/2015 8:59 AM
2	It would be complete if print media is considered.	8/24/2015 8:56 AM
3	Somewhere in this model I miss the explicit concept of "literacy". This includes traditional literacy (reading, writing, arithmetic), but also digital literacy, health literacy and civics (basic literacy for citizens). Obviously (b) addresses digital literacy, as does (d). If digital literacy is explicitly addressed in section 8, shouldn't other literacies be addressed here? What about basic reading and writing as a prerequisite to all the others? What about civics-literacy as more important than (e)? Is public transportation access more important than health literacy?	8/23/2015 3:06 PM
4	You are still stressing way too much access to ICT as a measure of access to information and knowledge. I would put indicator f) in first place. Indicator e) does not belong here. You could include it in "equity" if you wish.	8/23/2015 12:20 PM
5	Include Open Data (access to re-usable data of public sector organisations)	8/22/2015 5:57 PM
6	I wonder how non-connected people's access to information is factored in the indicators above. Those that use radio (is this already considered ICT) or village ulamas?	8/22/2015 3:27 PM
7	Maybe "Efforts to build human capacity to use ICT" could be replace by "RESULTS in building ...". Efforts may or may not bring to effective capacity building.	8/19/2015 10:07 PM
8	Community based communication services such as community radio could be included under (f)	8/15/2015 11:39 PM
9	I said very good because it takes well into consideration the affordability, accessibility and safety in line with the socio-cultural infrastructure environment or milieu.	8/15/2015 4:18 PM

Q15 In light of the above clarifications, how adequately does the revised set of indicators/criteria serve as proxies for assessing the Education for All construct within the city?

Answered: 34 Skipped: 1



	Very Poor	Poor	Fair	Good	Very Good	Total	Weighted Average
Level of adequacy	0.00% 0	2.94% 1	5.88% 2	47.06% 16	44.12% 15	34	4.32

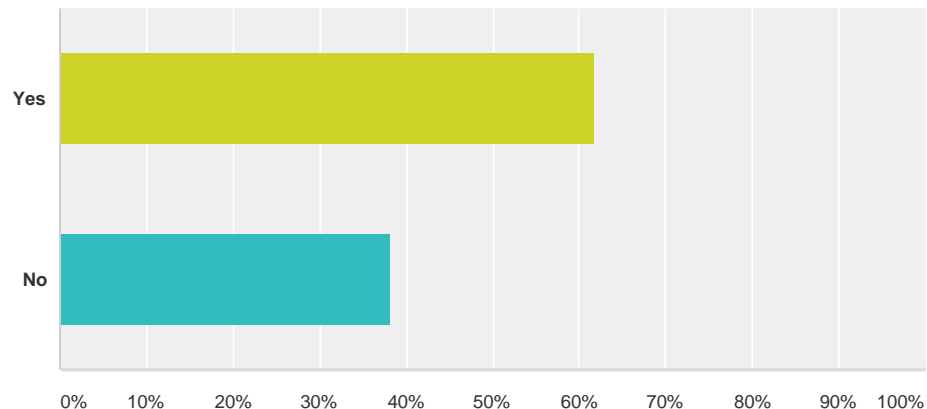
Q16 Optional - Please provide any comments you may have on this construct.

Answered: 9 Skipped: 26

#	Responses	Date
1	There are typo issues and repetitions in the list above, so I cannot assess it. I will mark it "poor" to signal the problem and be able to move on.	8/23/2015 9:07 PM
2	See comments in section 7. Education also should address health-literacy, civics-literacy, and more. Can we assume that all citizens in knowledge cities are actually reading/writing/arithmetic literate? Recent studies indicate that we can't.	8/23/2015 3:10 PM
3	Replace "informal structures" by "informal education". "Civic spaces" are a totally different factor. They belong more under openness or equity than here.	8/23/2015 12:20 PM
4	Opportunities for Lifelong Learning	8/22/2015 6:02 PM
5	All indicators seem to address directive supports. These need be complemented with affirmative action to develop self-directed learning, so far neglected in our scholarized societies	8/22/2015 3:40 PM
6	Note repetition in e-(2nd) c and d	8/18/2015 8:07 PM
7	I find these indicators very good as long as citizenships are involved in the policies processes and procedures for affordable education for all at the all social level.	8/15/2015 4:20 PM
8	The revised set of indicators have so far, been extremely well captured	8/14/2015 12:26 PM
9	There is a problem with how the indicators are presented above, and some indicators are duplicated.	8/13/2015 8:25 AM

Q17 During the last 5 years have you lived or worked in a city of a developing country in Africa or Asia? If so, please indicate the name of the city or cities. A list of developing countries is available at the following link: <http://www.isi-web.org/component/content/article/5-root/root/81-developing>

Answered: 34 Skipped: 1



Answer Choices	Responses
Yes	61.76% 21
No	38.24% 13
Total	34

#	Other (please specify)	Date
1	Dar es Salaam Tanzania	9/3/2015 9:05 AM
2	Nairobi	8/24/2015 1:17 PM
3	Addis Ababa	8/24/2015 8:57 AM
4	Nairobi, Kenya	8/23/2015 1:28 AM
5	Yangon, Delhi, Bangkok	8/22/2015 6:15 PM
6	New Delhi	8/22/2015 4:40 PM
7	Manila, Philippines; Jakarta, Indonesia	8/22/2015 3:28 PM
8	I have lived in a developing country but in Latin America. Monterrey, México.	8/21/2015 4:13 PM
9	Afghanistan - Kabul, Thailand - Bangkok, Bangladesh - Dhaka, Indonesia - Jakarta, Ethiopia - Addis Ababa, Myanmar - Yangon, Cambodia - Phnom Penh, Vietnam - Hanoi, Burkina Faso - Ouagadougou, China - Beijing, Lao PDR - Vientiane	8/19/2015 10:51 AM
10	Kitwe, Zambia	8/19/2015 8:31 AM
11	Patna, India	8/19/2015 1:31 AM
12	Abidjan, Lagos, Accra	8/19/2015 12:26 AM
13	Bangkok	8/18/2015 8:08 PM
14	philippines	8/17/2015 12:53 AM
15	New Delhi, India	8/15/2015 11:43 PM

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16	Austria, Vienna	8/15/2015 4:20 PM
17	Accra, Ghana, WEST AFRICA	8/14/2015 12:28 PM
18	Johannesburg, Nairobi, Kampala, Delhi, Jakarta, and several others	8/13/2015 8:25 AM

Q18 Please indicate up to 3 urgent challenges that impact the environmental, economic or social development in the city that you have named and which you think threaten its future growth and development? If you mentioned more than one city, please focus on the one with which you are most familiar.

Answered: 20 Skipped: 15

#	Responses	Date
1	Un-coordinated efforts toward environmental activities among the actors The lack of mass education at local levels that can penetrate and influence traditional and risky behaviour toward environment The growing reluctance by majority of youth to engage in hard- agricultural based activities for income Lack financial literacy and personal goals among the majority of social groups leading into poverty	9/3/2015 9:16 AM
2	Nairobi: 1) Access to information about the city that is timely and up to date 2) Public display of information that is multilingual and accessible 3) Job opportunities	8/31/2015 3:09 PM
3	1)Environmental on city waste management and water drainage. 2)High Youth generation with a lot of free time with the state unable to make productive use of them 3)Slow implementation of government policies for education and health	8/24/2015 1:25 PM
4	Rapid population growth and lack of political space	8/24/2015 9:03 AM
5	For Seoul that is a very complex metropolis it difficult to summarize its challenges. One of them it seems to be a veritable challenge involving the other two, the creation of mini clusters into a larger cluster. The mini cluster refers to sub-groups of 10-30 SMEs in a specific cluster meeting informally with no pre-specified agenda other than to provide a meeting point for the exchange of ideas and to seek strategic alliance partners, or even smaller groups of 5-12 SMEs, which work together under the guidance of a professional facilitator on specific well-designed agenda that the SMEs upon. It is also viewed as an industry-university-research institutes alliance that is built according to industrial or technical fields, such an alliance continuously develops mutual cooperation, joint learning and information sharing.	8/23/2015 7:11 PM
6	1) Security - an important basis for economic investment and social development, 2) Corruption - a detriment to sustainable development, 3) good governance and transparency	8/23/2015 1:43 AM
7	Development of community citizen engagement Improving the education and livelihoods of slum dwellers Creating more recreation facilities and public libraries for children and the retired	8/22/2015 8:27 PM
8	Infrastructure, high costs of living and access to essential services such as water and electricity	8/22/2015 7:30 PM
9	For all cities: lack of pro-active and future-oriented urban planning, lack of long-term resilient city planning	8/22/2015 6:27 PM
10	Lack of Civic Sense, Lack of Civic Amenities, Pollution	8/22/2015 4:52 PM
11	climate change (causing flooding, very warm temperature) pollution (noise, air, water, etc) urban planning	8/22/2015 3:30 PM
12	In my opinion, the main challenge is to shift the perspective from attract big corporations that will bring few jobs in a region to develop new small and medium enterprises to innovate faster, cheaper and with an specific impact in a local region.	8/21/2015 4:22 PM
13	Bangkok, Thailand Equality in wealth distribution Waste management Freedom of speech	8/19/2015 10:57 AM
14	Activities of extractive mining industry (excavations, pollution, chemical spillages) Poverty and unemployment Water and sanitation, and squatter/unplanned settlements	8/19/2015 8:35 AM
15	Corruption; inequality; terrible government service in general	8/19/2015 1:33 AM
16	Illiteracy Corruption Poverty	8/19/2015 12:29 AM
17	(1) A corrupt privileged class who holds the reins of the economy hostage. (2) Lack of social support for the young and old; continued use of "sweat shops" and exploiting of children.	8/18/2015 8:21 PM
18	1. Pollution 2. Water shortage 3. Housing	8/15/2015 11:59 PM
19	*1. Infrastructural deficit by way of unequal availability of energy. 2. Lack of capacity development in use of ICTs 3. Gender inequality	8/14/2015 12:33 PM

20	Weak management skills in the public sector Corruption Rapid urbanization	8/13/2015 8:30 AM
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Q19 For the challenge that you consider to be most critical or urgent, what do you feel are its main / root causes?

Answered: 20 Skipped: 15

#	Responses	Date
1	The changing global influence on youth attitude and expectations from government	9/3/2015 9:16 AM
2	Job opportunities	8/31/2015 3:09 PM
3	The main challenge is the management and flow of knowledge between those who have information and those who need it. A focus on short term solutions rather than long term ones	8/24/2015 1:25 PM
4	Cultural deficiencies, low and inferior level of education and external interferences/influences	8/24/2015 9:03 AM
5	The main difficulty is to establish changes between industries and universities	8/23/2015 7:11 PM
6	Corruption of the elite leading to impoverishing of the general,populace	8/23/2015 1:43 AM
7	Lack of public awareness and cooperation, coupled with poor governance	8/22/2015 8:27 PM
8	Poor planning by the relevant authorities, and corruption.	8/22/2015 7:30 PM
9	lack of collaboration among all stakeholders in a city: public-private-citizen	8/22/2015 6:27 PM
10	Most people living or working in this city didn't have civic education during the school days. While dustbins are available (not in plenty), many people prefer to litter.	8/22/2015 4:52 PM
11	lack of planning	8/22/2015 3:30 PM
12	The lack of intangible infrastructure (lack of intellectual property rights, respect for the authority, aversion to the risk, among others)	8/21/2015 4:22 PM
13	A total rethink of how to develop and implement universal and basic education A total rethink of how to develop and implement universal and basic education A total rethink of how to develop and implement universal and basic education	8/19/2015 10:57 AM
14	Reliance on mining industry and unemployment reflecting under investment in other sectors of the economy	8/19/2015 8:35 AM
15	Very hard to say briefly...many books have been written on this subject	8/19/2015 1:33 AM
16	Bad Governance	8/19/2015 12:29 AM
17	Personal desire for wealth, power.	8/18/2015 8:21 PM
18	Lack of planning and infrastructure	8/15/2015 11:59 PM
19	*Electricity -Energy mismanagement	8/14/2015 12:33 PM
20	Young democracy and unfamiliarity of electorate with importance of voting processes Apartheid history Human nature	8/13/2015 8:30 AM

Q20 For the most urgent challenge you identified, who are the key stakeholder groups that need to be involved to successfully respond to this challenge? What/how do you expect each stakeholder could contribute?

Answered: 20 Skipped: 15

#	Responses	Date
1	Local Government Authority and the NGOS and CBOs. Parents are almost loosing control over their youth children. Ministry of Education Government policies toward work rights and the right to work by each individual	9/3/2015 9:16 AM
2	Educational institutions, Private sector, public sector	8/31/2015 3:09 PM
3	Keystakeholders include: - The youth; They contribute with ideas and energy and other stakeholders need to listen and understand them. - Government: They manage and run the policies across sectors that can utilize available resources for youth empowerment - Private Sector/Non-Government: Are key beneficiaries and losers to an active/inactive youth. The contribution should be investment and knowledge channels	8/24/2015 1:25 PM
4	All inhabitants of the city, government and academia	8/24/2015 9:03 AM
5	From the point of view of the industries it is necessary to know better the university world in order to establish partnership and to create a collaborative platform	8/23/2015 7:11 PM
6	Politicians and representatives of all walks of life, particularly the poor and slum dwellers and representatives of minority tonic groups and the vulnerable groups.	8/23/2015 1:43 AM
7	Citizens, government officials, and politicians	8/22/2015 8:27 PM
8	Government, businesses, civil society and citizens	8/22/2015 7:30 PM
9	citizens are main stakeholders in a city but often the least involved	8/22/2015 6:27 PM
10	School and College students must be engaged on 'do-it-yourself' basis to stop littering by themselves, their parents, friends, kith and kin. They must develop civic sense to lead a littering-free smart city.	8/22/2015 4:52 PM
11	government, civil society, businesses, and citizens	8/22/2015 3:30 PM
12	College students. They should be integrated to real problems of the region, prepared to design solutions with students of different careers, guided by experienced professors and professionals and funded by government funds.	8/21/2015 4:22 PM
13	Government - rethink the value added of national talent People - demand a rethink of the value added of national talent	8/19/2015 10:57 AM
14	Government, business, industry, and international development agencies	8/19/2015 8:35 AM
15	No...political will, mental model of what a more democratic and equal society might look and act like.	8/19/2015 1:33 AM
16	Government - policy Private sector - investment Civil Society - education and watchdog	8/19/2015 12:29 AM
17	Until the lower strata of the population are mobilized this will continue; by "mobilized" I infer knowledge in terms of shared understanding: being aware that things can be different, understanding how they can be different, believing this is true and it can happen, feeling good about being a part of this change, taking ownership of it (I can do something about it) and knowing what to do about it.	8/18/2015 8:21 PM
18	Local, state and central governments.	8/15/2015 11:59 PM
19	The key stakeholders are government, and power distributors	8/14/2015 12:33 PM
20	Civil society, to hold politicians and bureaucrats to account Advantaged social groups, to engage again in social development rather than personal gain	8/13/2015 8:30 AM

Q21 Briefly describe any existing collaboration or conflict between the stakeholders you identified?

Answered: 20 Skipped: 15

#	Responses	Date
1	The youth, the LGA and Council regulatory machinery in the city is in much tension and conflict over the right access and support to small business enterprises and access to financial and capacity building	9/3/2015 9:16 AM
2	Little consultation on responding to the needs of young job seekers in a concerted way	8/31/2015 3:09 PM
3	Conflict is high due to poverty and lack of political goodwill.	8/24/2015 1:25 PM
4	Government in power does not have legitimacy and mistrust the people and academia.	8/24/2015 9:03 AM
5	The Sangam DMC is one of the most recent applications of a mini cluster strategy in Korea	8/23/2015 7:11 PM
6	No collaboration of authorities with minority groups (some tribes and foreigners such as Somalis As well as minority religious groups such as Muslims) on the contrary antagonization due to profiling and group punishment	8/23/2015 1:43 AM
7	NA	8/22/2015 8:27 PM
8	Government sometimes wanting to go alone on this project.	8/22/2015 7:30 PM
9	private/business interests colliding with common/citizens interests	8/22/2015 6:27 PM
10	For building a smart city (as a unit of knowledge society) basic civic amenities must be provided by the government or local urban bodies. Now Government must sensitize and raise awareness for inculcating civic sense in citizens of the state.	8/22/2015 4:52 PM
11	lack of trust between CSO and government	8/22/2015 3:30 PM
12	Everyone try to achieve the major benefit for himself.	8/21/2015 4:22 PM
13	Ongoing political conflict between the Army who is in charge and corrupt politicians who wish to reinstate democracy and a large base of fairly uneducated mass	8/19/2015 10:57 AM
14	They do cooperate but more could be done.	8/19/2015 8:35 AM
15	Sad to say there is very little collaboration..	8/19/2015 1:33 AM
16	Diverse	8/19/2015 12:29 AM
17	The educational system is a good starting place; with the programs offered by BU an example. BU's outreach to the business community also facilitates a flow. Yet, it's almost as if this is all invisible! Small children continue to be exploited and/or exposed to extreme situations that impact their entire lives. For example, women who work in the slaughter houses have their infants and small children right beside them as they bludgeon animals, etc.	8/18/2015 8:21 PM
18	Conflict between elected officials at different levels of governance is primary cause of unchecked and unplanned growth.	8/15/2015 11:59 PM
19	Debt reconciliation is urgently needed in order to straighten affairs	8/14/2015 12:33 PM
20	Tension between needs of disenfranchised and personal interests of the wealthy	8/13/2015 8:30 AM

Q22 Are there any specific advantages (cultural, location, reputation, specific knowledge / experiences, partnerships etc.) that the city can draw on to mitigate / overcome / resolve the challenge you identified?

Answered: 20 Skipped: 15

#	Responses	Date
1	School - Community and private sector partnership including industry. Education cannot at all remain to be the sole responsibility of government. And schools cannot in any way succeed in educating the child.	9/3/2015 9:28 AM
2	cultural: multicultural reputation: ICT hub in East Africa location: relatively well connected with transport	8/31/2015 3:14 PM
3	Yes: There is so much potential in sharing of historical growth, international partnerships and diverse cultures in Nairobi that the city can use to mitigate these challenges. Nairobi is centrally located both in Kenya and the region and can be very advantages if lessons learned and studies done with research can be implemented.	8/24/2015 1:35 PM
4	The inhabitants of the city are very receptive to positive changes and participation when it is deemed to be genuine.	8/24/2015 9:24 AM
5	The city of Seoul presents many advantages as culture and location (between China and Japan) reputation and the presence of many important industries specialized in New Technologies (Samsung, Kicox Digital Complex etc..)	8/23/2015 7:17 PM
6	Strive to be inclusive and observe human rights of all citizens as well as refugees	8/23/2015 1:48 AM
7	Cultural historical tradition; education level	8/22/2015 8:29 PM
8	Yes. The PPP in the telecom sector have produced results and a good example.	8/22/2015 7:31 PM
9	Delhi: active civil society should be more involved in mitigating challenges	8/22/2015 6:35 PM
10	Advantages of cultural, location, reputation, specific knowledge / experiences and partnerships can be explored by the civic bodies.	8/22/2015 4:57 PM
11	good governance, high credit ratings, good investment climate	8/22/2015 3:33 PM
12	The location, reputation and human capital are the most valuable assets.	8/21/2015 4:25 PM
13	A Teflon-like resilience to overcome conflicts but a rare ability to come together and agree on how to shape the future	8/19/2015 11:01 AM
14	Partnerships of government, development agencies, and communities is critical.	8/19/2015 8:47 AM
15	They have been making some progress through the partnership between the government and several NGOs.	8/19/2015 1:36 AM
16	All cities are part of the ECOWAS regional block, benefiting from regional integration and free movement	8/19/2015 12:33 AM
17	The increasing visibility of business practices. The expansion of local organizations into a global market, as well as global organizations moving into Thailand, increase visibility into these "ignored" realities. The Thai culture likes things to "look" good; and people are not inclined to "rock the boat" ... this visibility may be the precursor to action.	8/18/2015 8:32 PM
18	Political will to collaborate for public good can contribute to change the situation.	8/16/2015 12:11 AM
19	Regular education on energy usage minimization	8/14/2015 12:40 PM
20	Many social strengths on which to draw, if effectively managed and provided good leadership	8/13/2015 8:32 AM

Q23 Are there any specific circumstances or mindsets that may need to be confronted in order to address/resolve the challenge that you identified (Please be as specific as possible)?

Answered: 20 Skipped: 15

#	Responses	Date
1	Youth attitude toward work	9/3/2015 9:28 AM
2	- Taking concrete and concerted efforts to address job creation - Taking the specificity (language, skills sets, etc) of young people into account	8/31/2015 3:14 PM
3	Yes. Conflict between National and County governments which can be resolved by clear policy without running to court all the time. Yes. Tribalism is a very difficult mindset which depicts other cultures as inferior hence may not deserve some considerations especially in education and health. Yes. Inability to accept that women are equal players to development and should be accepted in all spheres of the development agenda.	8/24/2015 1:35 PM
4	The city and the country in general lives under a culture of winner takes it all. This does not leave room for tolerance and understanding.	8/24/2015 9:24 AM
5	May be.	8/23/2015 7:17 PM
6	openness to other cultures and moving away from tribalism	8/23/2015 1:48 AM
7	Attitude of people to work together selflessly for the community.	8/22/2015 8:29 PM
8	Corruption	8/22/2015 7:31 PM
9	power-distance between citizen and municipal decision-making need to be reduced in order to collaboratively address urban challenges	8/22/2015 6:35 PM
10	For building a smart city (as a unit of knowledge society) basic civic amenities must be provided by the government or local urban bodies. Now Government must sensitize and raise awareness for inculcating civic sense in citizens of the state.	8/22/2015 4:57 PM
11	design thinking and context-based problem solving	8/22/2015 3:33 PM
12	sense of community	8/21/2015 4:25 PM
13	The inability to question authority and the loss of face factor has to go in order for Thailand to be able to move forward constructively as a nation to meet the challenges of the 21st century.	8/19/2015 11:01 AM
14	Belief in local investors and their capabilities need to be enhanced, and also their CSR contributions increased.	8/19/2015 8:47 AM
15	Religion, deep traditon of corruption, very weak and ineffective government, legacy of imperialism..	8/19/2015 1:36 AM
16	Gender taboos Religious extremism Dependency on colonial masters	8/19/2015 12:33 AM
17	Since "everything is exactly as it should be", that is, what exists today came into being as a result of all the actions, beliefs, values, etc. of the past, then clearly there re some mindsets that need to be confronted. The lack of education across the board is certainly foundational; and self worth and self knowledge go hand in hand.	8/18/2015 8:32 PM
18	Greater public awareness to hold the politicians accountable can help improve the situation.	8/16/2015 12:11 AM
19	Lights are often on throughout weekends and evenings in most Government offices when there is no need for use of power in these locations. Addressing this issue is very important	8/14/2015 12:40 PM
20	Integrity and competence in management Culture of honesty needs to be developed to use resources effectively	8/13/2015 8:32 AM

Q24 Are there any efforts currently underway to address the challenge you identified? In your view how could the constructs that contribute to individual capacities and capabilities as well as societal values and frameworks contribute to this process?

Answered: 20 Skipped: 15

#	Responses	Date
1	Little or no recognised efforts are there. Under the current political changes and campaigns by multiparty, we need well organised youth forums on the different areas such as employment, behaviour, work culture, learning to live together and bench-marking with best practices elsewhere. Councils and the local authority need the power to educate and contain the youth in the rural and in economic activities	9/3/2015 9:28 AM
2	- Limited efforts but not concerted.	8/31/2015 3:14 PM
3	A little effort seen but only as a short term solution. A lot of work needs to go into inculcating long term thinking and advocacy within the societal values and frameworks suggested here.	8/24/2015 1:35 PM
4	Some but fragmented, one sided and slow.	8/24/2015 9:24 AM
5	It is very difficult to answer shortly	8/23/2015 7:17 PM
6	None that I know of. A lot of effort needs to be made to change mind sets and build trust and empathy between the various groups.	8/23/2015 1:48 AM
7	Limited knowledge of any significant efforts.	8/22/2015 8:29 PM
8	Yes but they are knee jerk and sort of lack sustainability.	8/22/2015 7:31 PM
9	new forms of collaboration such as urban lab, civic labs etc are efforts where different forms of learning can be tested	8/22/2015 6:35 PM
10	Yes, there are few national level initiatives, such as Swachh Bharat Abhiyan, and Swachh Bharat Ranking.	8/22/2015 4:57 PM
11	Yes. Awareness raising, mapping of vulnerable areas. Ensuring that capacity is built to address the challenges identified.	8/22/2015 3:33 PM
12	The challenge could be achieved if the mindset of the population changed.	8/21/2015 4:25 PM
13	There are NO meaningful efforts ongoing.	8/19/2015 11:01 AM
14	The Municipality (local government), central government, development agencies, and mining houses, including political parties are trying.	8/19/2015 8:47 AM
15	There have been some limited progress through NGOs, and the central government but not enough to radically change things	8/19/2015 1:36 AM
16	Open data issues Anti corruption and budget monitoring initiatives Social media activism	8/19/2015 12:33 AM
17	No doubt ... but I am not familiar with them.	8/18/2015 8:32 PM
18	The media, including social media try to highlight the issues but politicians engage in blame game which is counter productive.	8/16/2015 12:11 AM
19	Not really. Lack of regular education on how the deficit under review affects socio-economic development has undermined any minimal to address the challenge.	8/14/2015 12:40 PM
20	Many efforts underway - would be the subject of a research thesis in its own right to answer this question	8/13/2015 8:32 AM

Q25 What information and processes do you think could enable stakeholders to develop responses for overcoming / mitigating / resolving the challenge you identified?

Answered: 20 Skipped: 15

#	Responses	Date
1	Together we could resolve: the UN agenda, international support to working local initiatives in a sustained participatory by youth approach could work.	9/3/2015 9:28 AM
2	- Easy to use information on target group (young people), needs and skills sets.	8/31/2015 3:14 PM
3	Open information platforms, open data, ability to contribute without prejudice will enable stakeholders to viably participate and raise concerns before issue get out of hand. A clear decision making process should be in place so issues are handled swiftly and consistently.	8/24/2015 1:35 PM
4	A wide range of processes and knowledge could benefit works that are targeting the problem. They will not impact much though as the bigger problem of skewed resource and power imbalance is likely to remain unchanged.	8/24/2015 9:24 AM
5	A suggestion may be to analyze other similar processes in other world cities, such as New York, for example.	8/23/2015 7:17 PM
6	trust building and inclusive processes need to be persued.	8/23/2015 1:48 AM
7	Sustained campaign of citizens rights	8/22/2015 8:29 PM
8	Information from government Ministries that is relevant, authentic and which people can feel they can trust.	8/22/2015 7:31 PM
9	open, collaborative action spaces to prototype solutions for knowledge cities	8/22/2015 6:35 PM
10	There should be adequate, ready to use information available to the citizens on availability of basic civic amenities.	8/22/2015 4:57 PM
11	data on climate, flooding, diseases, etc.	8/22/2015 3:33 PM
12	Knowledge sharing/dissemination could be a process that could lead to the creation of new start ups.	8/21/2015 4:25 PM
13	A benign Dictator who has the people's interest at hear and who not corruptible - which is rare, but one could use Singapore and Malaysia as a model to study.	8/19/2015 11:01 AM
14	Education and awareness building is crucial to mobilising individuals to engage with developmental challenges. It is important to see communities and their leadership as crucial partners rather than receipients of development policies and actions.	8/19/2015 8:47 AM
15	Change the mindset and incentives and rewards of the influencers in the local society	8/19/2015 1:36 AM
16	Open governance, open data practices. Democratic and participative policy processes	8/19/2015 12:33 AM
17	All that you have in your model comes into play. As a country rmoves toward becoming a knowledge city, all of the corruption and exploitation issues come to the surface. That is the first step: awareness and the call to action.	8/18/2015 8:32 PM
18	Creating greater awareness and civic education can help mitigate the main challenges. Holding politicians accountable can also play an important role.	8/16/2015 12:11 AM
19	Regular or consistent public education in local governments, towns and cities.	8/14/2015 12:40 PM
20	Not sure	8/13/2015 8:32 AM

Q26 Dear Panelists,I would like to thank you once more for your participation and contribution to this Delphi Survey and for your kind assistance in refining the knowledge-based development model and identifying relevant indicators/criteria.Kindly take a moment to share with me any feedback, learning, insights or suggestions that have occurred as a result of your participation in this Delphi study.

Answered: 33 Skipped: 2

#	Responses	Date
1	Learning opportunity is appreciated and I feel professionally challenged and growing through the sharing	9/3/2015 9:29 AM
2	The indicators are useful in preparing projects and the linkage among the indicators	8/31/2015 3:15 PM
3	Dear Paul, Thank you for asking me to participate. I wish you the best and I look forward to hearing more about your work. Best regards, MagDa	8/26/2015 2:56 PM
4	This has been a challenging exercise and especially for me in Nairobi knowing that there are actual answers to these issues both from academia; research and industry yet they remain largely unimplemented. I wish you well as you complete you research findings and look forward to celebrating another milestone in development - new knowledge.	8/24/2015 1:37 PM
5	The knowledge-based development model that is being developed is very good and comprehensive. It would need to have a list of assumptions and requirements that are required for it to work. Its success and/or failure should be attributable to it only, and that can happen when other factors are leveled. Considering how the model could work in say North Korea, Sweden, India and DRC. success of the model under construction	8/24/2015 9:33 AM
6	This is an interesting initiative, however I am concerned that the model tries too hard to accommodate UNESCO's positions and priorities. It would be interesting to test the model in a number of locations to see if it actually "models" the local situations, as well as if it can be used by cities in developing countries to achieve their goals.	8/23/2015 9:13 PM
7	I suggest that you read: Wisdom: Its Nature, Origins, and Development (Edited by Robert J. Sternberg) "For several thousands of years wisdom has been mentioned as the capstone of human knowledge" - Toward a psychology of wisdom and its ontogenesis by Paul B. Baltes and Jacqui Smith	8/23/2015 7:52 PM
8	all is good	8/23/2015 7:18 PM
9	An excellent effort to codify knowledge cities development model. As no perfect models exist, so attempts to create good models need to be complemented with good field testing. If this takes place, please share any findings with this Delphi-group. In Knowledge Cities, all citizens should ideally be 'smart,' both in the sense of digitally literate and able to think independently about the issues that impact their lives. More emphasis on thinking skills is essential in supporting smart citizens in smart cities. I hope this study will contribute to deeper thinking about that.	8/23/2015 3:16 PM

Round Three: Delphi Study - Validating a Knowledge City Maturity Model_3

10	Dear Paul, Sorry but I believe that you have only very marginally taken account of my two major criticisms: 1) Definitions and hypotheses. I now understand from your Round 2 report that the Delphi group is only intended to provide indications (which might be only be subjective/intuitive) on the indicators for knowledge maturity, indicators which should be field tested at a later stage. This is OK now, but there is also the problem of the link between knowledge maturity and knowledge processes. I was VERY surprised to see for the first time in your Round 2 report that you consider this to be a tautology (i.e. that knowledge maturity is defined as what supports the practical application of knowledge processes for development). For me this is simplistic (before, you spoke of knowledge capital as the necessary intermediary between knowledge maturity and knowledge processes - for me this much more realistic) and risks transforming the whole knowledge-based development model from a social science research hypothesis into a politically correct belief. In any case, I would stress the need to clearly state the definitions of the constructs and the role of the study at the very beginning (more or less as you have done in the Round 2 report). 2) Link to cities. Neither my generic nor my specific suggestions on how to strengthen the relevance of the study to cities specifically have been taken into account. What is a societal goal for a city: a municipal policy, a policy developed at a higher level, a general consensus of citizens? I can see that for various reasons you have been obliged to narrow down to cities, but in my opinion the whole study would be more credible if you simply eliminated the word "cities" everywhere, or better still tried much harder to show how cities are particularly concerned (by relevance and/or by operational influence) by specific indicators.	8/23/2015 12:23 PM
11	Good framework for knowledge development. Good luck with the remaining work.	8/23/2015 1:49 AM
12	NA	8/22/2015 8:30 PM
13	Plenty of information has come up and which you have been able to synthesis and categorize.	8/22/2015 7:31 PM
14	The knowledge city maturity model should include concrete examples of practices and experiences	8/22/2015 6:37 PM
15	This survey was a learning experience for me.	8/22/2015 4:58 PM
16	I think that the resulting sets of indicators will be a significant contribution to the understanding and development of knowledge societies. I am less enthusiastic about the model insofar it does not aims at capturing the distinctive dynamics of k-based value generation and distribution, as well as the new ethos that such unprecedented dynamics makes possible	8/22/2015 3:45 PM
17	It is difficult to base consensus by averaging responses or judge comprehensiveness without actual f2f interaction.	8/22/2015 3:35 PM
18	I think that theoretically speaking, your model is valid and useful. In my personal point of view, a better graphic design could help to make it more appealing and easy to understand for decision makers and practitioners.	8/21/2015 4:27 PM
19	Perhaps, in some place of the survey it would be useful to collect some data on investments made to reach (or at least to improve) a status of "knowledge city". I look forward to receive final results of this very far reaching initiative.	8/19/2015 10:12 PM
20	NA	8/19/2015 11:02 AM
21	It was a pleasure participating but I hope the concept of CITY you have does not only relate to mega-metropolis. In Africa cities can simply be small settlements serving as 'growth points' for cities or communities.	8/19/2015 8:51 AM
22	Exceptional piece of collaborative research!	8/19/2015 5:15 AM
23	Thanks back to you for attempting this very interesting and difficult task...best of luck with it and let me know if I can be of further help	8/19/2015 1:37 AM
24	Themes that were cross-cutting	8/19/2015 12:34 AM
25	Thank you for your efforts. This is important work.	8/18/2015 8:32 PM
26	Thank you for this intellectual adventure, and the possibility of co-thinking. It was a good method, i've learned a lot.	8/16/2015 2:41 PM
27	I have seen significant refinement of the knowledge based development model. The model can help in formulating policies to foster development.	8/16/2015 12:14 AM
28	Dear Paul, This is a great opportunity to me to join this interesting survey. I have learned more in detail about the Knowledge-based development model and the proxies indicators. Thank you so much for giving me this chance to participate in this survey. I appreciate it. I am very happy to contribute, and I hope that my contribution is positive. Please I am available for any futher assistance. I wish you a successful dissertation. Thank you for all. Respectfully yours, Amouzou Bedi	8/15/2015 4:22 PM
29	Very good work!! Congratulations! Please, let me know the final results of your research. Thank you for the opportunity to participate in your study.	8/14/2015 6:25 PM
30	This method of survey has broadened my views on how to obtain rigor in research work.	8/14/2015 12:42 PM
31	Congrats and good luck!	8/13/2015 8:27 PM
32	Good luck at the rest of your PhD research. Send me a PhD copy of your thesis when completed.	8/13/2015 12:14 PM
33	N/A	8/13/2015 8:32 AM

DELPHI STUDY ROUND 3 DATA ANALYSIS (PARTIAL)

The following tables illustrate the data collected over the course of the three rounds of the Delphi study and present the quantitative analysis techniques that were used. *Each of the Delphi Study Rounds Reports provides detailed information on the quantitative and qualitative analysis conducted and the results of these rounds.* The raw data files with the quantitative and qualitative data downloaded from Survey monkey are also included.

		UNESCO				KBD				Pluralism				Inclusion				Openness				Freedom of Expression				Cultural & Linguistic Diversity				Education for All				
		Round 1	Round 2	difference	diff Square	Round 1	Round 2	difference	diff Square	Round 1	Round 2	difference	diff Squared	Round 1	Round 2	difference	diff Square	Round 1	Round 2	difference	diff Square	Round 1	Round 2	difference	diff Square	Round 1	Round 2	difference	diff Square	Round 1	Round 2	difference	diff Squared	
afachinelli	Ana Cristin	Fachinelli	4	5	-1	1	4	5	-1	1	0	0	0	0	4	5	-1	1	4	5	-1	1	5	5	0	0	4	4	0	0	5	5	0	0
alex@mo	Alex	Bennet	4	4	0	0	4	4	0	0	4	4	0	0	4	4	0	0	4	4	0	0	5	4	1	1	4	4	0	0	5	4	1	1
amouzou	Amouzou	Bedi	4	4	0	0	4	3	1	1	4	5	-1	1	4	5	-1	1	4	5	-1	1	4	5	-1	1	4	5	-1	1	4	5	-1	1
asrsharma	Ravi	Sharma	3	4	-1	1	4	3	1	1	4	4	0	0	3	4	-1	1	4	4	0	0	4	4	0	0	3	4	-1	1	5	4	1	1
demarcial	Dave	Marcial	3	4	-1	1	3	4	-1	1	4	4	0	0	5	4	1	1	5	4	1	1	5	4	1	1	5	4	1	1	4	4	0	0
f.ssereo@	Florence	Ssereo	4	4	0	0	4	5	-1	1	3	4	-1	1	3	4	-1	1	4	4	0	0	4	5	-1	1	4	4	0	0	4	5	-1	1
fissehaalazar@gmail.com			4	5	-1	1	4	4	0	0	5	5	0	0	5	5	0	0	5	4	1	1	5	5	0	0	5	5	0	0	4	5	-1	1
fcarrillo@	Francisco	Carrillo	3	3	0	0	3	3	0	0	4	4	0	0	4	4	0	0	4	5	-1	1	5	3	2	4	3	2	1	1	3	3	0	0
j.dutoit@u	Jaco	Du Toit	3	4	-1	1	4	4	0	0	3	4	-1	1	4	4	0	0	4	4	0	0	4	4	0	0	4	4	0	0	3	4	-1	1
jarvling@h	Johan	Arvling	3	4	-1	1	4	4	0	0	4	4	0	0	4	4	0	0	5	4	1	1	5	4	1	1	4	3	1	1	4	4	0	0
johannaa	Johanna	Awotwi	4	5	-1	1	4	4	0	0	4	4	0	0	3	4	-1	1	5	3	2	4	4	5	-1	1	3	3	0	0	5	5	0	0
khan.abdu	Abdul	Khan	5	5	0	0	5	5	0	0	5	4	1	1	5	5	0	0	5	5	0	0	5	5	0	0	5	5	0	0	5	5	0	0
larryprusa	Larry	Prusak	4	5	-1	1	4	5	-1	1	5	4	1	1	5	4	1	1	4	4	0	0	5	5	0	0	4	3	1	1	5	4	1	1
magdabe	Magda	Berhe Joh	5	4	1	1	3	4	-1	1	0	0	0	0	4	5	-1	1	5	5	0	0	5	5	0	0	4	4	0	0	4	5	-1	1
melsioufi@gmail.com			5	4	1	1	4	4	0	0	5	4	1	1	4	4	0	0	5	4	1	1	5	4	1	1	5	4	1	1	5	4	1	1
michaeljd	Michael	Sutton	4	5	-1	1	5	5	0	0	5	5	0	0	5	4	1	1	4	5	-1	1	5	5	0	0	5	5	0	0	5	5	0	0
mikocana	Michael	Canares	4	4	0	0	3	3	0	0	3	4	-1	1	4	4	0	0	4	4	0	0	4	4	0	0	3	4	-1	1	4	4	0	0
muhunyog	Gladys	Muhunyo	4	5	-1	1	4	4	0	0	3	4	-1	1	4	4	0	0	5	4	1	1	5	5	0	0	5	4	1	1	4	5	-1	1
neilshel@	Neil	Butcher	3	4	-1	1	3	4	-1	1	3	4	-1	1	4	4	0	0	3	4	-1	1	4	4	0	0	4	4	0	0	3	4	-1	1
octavio.gl	OCTAVIO	GONZALE	4	4	0	0	3	4	-1	1	4	5	-1	1	4	5	-1	1	5	5	0	0	5	5	0	0	5	5	0	0	4	5	-1	1
oshumba@yahoo.co.uk			3	4	-1	1	2	4	-2	4	3	4	-1	1	3	4	-1	1	3	3	0	0	4	4	0	0	4	4	0	0	2	5	-3	9
pccarlson	Paul	Carlson	5	5	0	0	3	4	-1	1	4	4	0	0	4	4	0	0	4	4	0	0	4	4	0	0	4	4	0	0	4	4	0	0
rab.arpad	ArpAjd	Rab	5	5	0	0	4	5	-1	1	4	4	0	0	4	5	-1	1	4	5	-1	1	5	4	1	1	4	5	-1	1	5	5	0	0
sdonkor@	Stephen	Donkor	3	4	-1	1	3	4	-1	1	3	4	-1	1	3	4	-1	1	4	4	0	0	4	5	-1	1	4	4	0	0	3	4	-1	1
snowded	Dave	Snowden	2	3	-1	1	1	3	-2	4	3	3	0	0	3	3	0	0	2	3	-1	1	2	3	-1	1	2	3	-1	1	2	3	-1	1
tan.yigitca	Tan	Yigitcanla	3	4	-1	1	3	4	-1	1	4	4	0	0	4	4	0	0	4	4	0	0	4	4	0	0	4	4	0	0	5	4	1	1
thorkil@g	Peter	SchiÄ,ler	3	3	0	0	4	4	0	0	0	0	0	0	2	4	-2	4	4	4	0	0	4	3	1	1	3	4	-1	1	3	3	0	0
SUM diff squared					17				21				12				17				16				15				12				24	
Spearman's rank order			0.995				0.994			0.995			0.995				0.995				0.995				0.995				0.996				0.993	
Critical value			α = 0.05 0.317	α = 0.025 0.37		α = 0.05 0.317	α = 0.025 0.37			α = 0.05 0.343	α = 0.025 0.409			α = 0.05 0.317	α = 0.025 0.37			α = 0.05 0.317	α = 0.025 0.37			α = 0.05 0.317	α = 0.025 0.37			α = 0.05 0.317	α = 0.025 0.37			α = 0.05 0.317	α = 0.025 0.37			

Figure 1: Comparison of construct scores for common Round 1 and Round 2 participants in assessing Spearman’s ranked coefficients(non-parametric)

Individual expert scores for Round 1														Individual expert scores for round 2													
				UNESCO	KBD	H. Rights	Pluralism	Inclusion	Equity	Opennes	Free of E	Univ. Acc	Cult. & Ling	Educat.					UNESCO	KBD	Pluralism	Inclusion	Opennes	Free of E	Cult. & Li	Educat.	
	afachinelli	Ana Cristin	Fachinelli		4	4	4		4	4	5	3	4	5		5	5	5	5	5	5	5	5	5	5	5	
	alex@mo	Alex	Bennet		4	4	4	4	4	4	5	5	4	5		4	4	4	4	4	4	4	4	4	4	4	
	amouzou.	Amouzou	Bedi		4	4	5	4	4	4	4	4	4	4		4	4	3	5	5	5	5	5	5	5	5	
	asrsharma	Ravi	Sharma		3	4	4	4	3	4	4	3	3	5		4	4	4	4	4	4	4	4	4	4	4	
	demarcial	Dave	Marcial		3	3	4	4	5	5	5	4	5	4		4	4	4	4	4	4	4	4	4	4	4	
	f.ssereo@	Florence	Ssereo		4	4	4	3	3	3	4	4	4	4	4		4	5	4	4	4	4	5	4	4	5	
	fissehaalazar@gmail.com				4	4	5	5	5	4	5	5	5	4		4	4	5	5	4	5	5	5	5	5	5	
	fcarrillo@	Francisco	Carrillo		3	3	4	4	4	2	4	5	2	3	3		3	3	4	4	5	3	2	3	3	3	
	j.dutoit@u	Jaco	Du Toit		3	4	3	3	4	4	4	3	4	3		4	4	4	4	4	4	4	4	4	4	4	
	jarvling@h	Johan	Arvling		3	4	4	4	4	5	5	4	4	4		4	4	4	4	4	4	4	3	4	4	4	
	johannaa	Johanna	Awotwi		4	4	4	4	3	5	5	4	3	3		5	4	4	4	3	5	3	5	5	5		
	khan.abdu	Abdul	Khan		5	5	5	5	5	5	5	5	5	5		5	5	4	5	5	5	5	5	5	5	5	
	larryprusa	Larry	Prusak		4	4	4	5	5	5	4	5	4	4	5		4	5	4	4	4	5	3	4	4	4	
	magdabe	Magda	Berhe Johnson		5	3	5		4	5	5	3	4	4		4	4										
	melsioufi@gmail.com				5	4	5	5	5	5	5	4	5	5		5	4	4	4	4	4	4	4	4	4	4	
	michaeljd	Michael	Sutton		4	5	5	5	5	4	5	4	5	5		5	5	5	5	4	5	5	5	5	5	5	
	mikocana	Michael	Canares		4	3	4	3	4	4	4	3	3	4		4	3	4	4	4	4	4	4	4	4	4	
	muhunyog	Gladys	Muhunyo		4	4	4	3	4	5	5	4	5	4		4	5	4	4	4	4	5	4	5	4	4	
	neilshel@	Neil	Butcher		3	3	4	3	4	4	3	4	3	4	3		4	4	4	4	4	4	4	4	4	4	
	octavio.gl	OCTAVIO	GONZALEZAGUILA		4	3	5	4	4	5	5	4	5	4		4	4	5	5	5	5	5	5	5	5	5	
	oshumba@yahoo.co.uk				3	2	4	3	3	3	4	3	4	2		4	4	4	4	3	4	4	4	5	4	4	
	pccarlson	Paul	Carlson		5	3	4	4	4	4	4	4	4	4		4	4	4	4	4	4	4	4	4	4	4	
	rab.arpad	ArpAjd	Rab		5	4	5	4	4	5	4	4	4	5		4	4	4	5	4	5	4	5	5	5	5	
	sdonkor@	Stephen	Donkor		3	3	4	3	3	3	4	4	4	3		4	4	4	4	4	4	5	4	4	4	4	
	snowded	Dave	Snowden		2	1	3	3	3	3	2	2	2	2		2	2	3	3	3	3	3	3	3	3	3	
	tan.yigitca	Tan	Yigitcanlar		3	3	4	4	4	4	4	4	4	5		4	4	4	4	4	4	4	4	4	4	4	
	thorkil@g	Peter	SchiÄ_ler		3	4	3		2	3	4	3	3	3		3	3										

		UNESCO		KBD		Pluralism		Inclusion		Openness		Free of Expr		Cult. & Ling		Educat.	
		Round 1	Round 2	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2
Median		4	4	4	4	4	4	4	4	4	4	5	4	4	4	4	4
	Q3	4	5	4	4	4	4	4	4,5	5	5	5	5	4,5	4	5	5
	Q1	3	4	3	4	3	4	3,5	4	4	4	4	4	4	4	3,5	4
Interquartile range (Q3 - Q1)		1	1	1	0	1	0	0,5	0,5	1	1	1	1	0,5	0	1,5	1

$$CG_i = \frac{(IQR)_{1i} - (IQR)_{2i}}{(IQR)_{1i}}$$

Convergence of Group opinions for statement I = CGi

(IQR)1i = interquartile range in round 1 for statement i

(IQR)2i = interquartile range in round 2 for statement i

0 <= CGi <= 1

	UNESCO	KBD	Pluralism	Inclusion	Openness	Free of Expr	Cult. & Ling	Educat.
CGi	0	1	1	0	0	0	1	0,33333333

Figure 3: Assessment of interquartile range and convergence of opinions for constructs for Round 1 and Round 2.

Consider interquartile ranges

			UAC	
			Round 3	Round 1
afachinell	Ana Cristi	Fachinelli	5	3
alex@mo	Alex	Bennet	5	5
amouzou	Amouzou	Bedi	5	4
jarvling@	Johan	Arvling	3	4
johannaa	Johanna	Awotwi	5	3
khan.abd	Abdul	Khan	5	5
larryprus	Larry	Prusak	4	4
magdabe	Magda	Berhe Johnson	5	3
melsioufi@gmail.com			4	4
michaeljd	Michael	Sutton	5	4
mikocana	Michael	Canares	4	3
muhunyo	Gladys	Muhunyo	4	4
neilshel@	Neil	Butcher	4	3
octavio.g	OCTAVIO	GONZALEZ AGUILA	5	4
oshumba@yahoo.co.uk			4	3
pccarlson	Paul	Carlson	4	4
rab.arpac	ArpAjd	Rab	5	4
tan.yigitc	Tan	Yigitcanlar	4	4
thorkil@g	Peter	SchiÅ,ler	4	3
	Claudio	Menezes	4	
	Sanjaya		3	
	Grace	Githaiga	4	
	Waltraut	Ritter	4	
	John	Rose	3	
	Nnena	Nwakanma	5	
	Edna	Pasher	4	
	Fish		4	5
	Patrizia	Ingalliana	4	3
	Francisco	Carilla	5	2
	Hank	Kune	3	2
	Anup	Dhas	4	

Universal Access to Information		
	Round 3	Round 1
Median	4	4
Q3	5	4
Q1	4	3
Interquartile Range (Q3-Q1)	1	1

Figure 4: Assessment of inter-quartile stability for the Construct universal access to information for Round1 and Round 3

Universal access to information

<u>Rank</u>	<u>Round 1</u>	<u>Round 2</u>
1	Efforts to build human capacity to use ICT	Affordability, accessibility and safety of Internet services;
2	Affordability of Internet services	Efforts to build human capacity to use ICT;
3	Availability of on-line access to government services	Access to reliable and affordable power supply;
4	Adequacy and accessibility of the public transportation system	Availability of on-line access to government services;
5	'...	Adequacy and accessibility of the public transportation system;
6	'...	Presence of knowledge clusters (local/regional) and communities of practice
7	'...	Support for traditional/local knowledge (preservation, valorization and use);

Openness

<u>Rank</u>	<u>Round 1</u>	<u>Round 2</u>
1	Transparency and participation in public policy/decision-making processes	Transparency in public policy/decision-making processes
2	Willingness to explore unconventional approaches to solving societal challenges	Participation in public policy/decision-making processes
3	Promotion of open standards	Willingness to explore unconventional approaches to solving societal challenges
4	'...	Promotion of open standards
5	'...	Protection of personal privacy and personal data

Cultural and Linguistic diversity

<u>Rank</u>	<u>Round 1</u>	<u>Round 2</u>
1	Support for the city's breadth of heritage and cultural expressions	Level of capacity building in cultural expression sector
2	Fostering and promotion of multilingualism	Level of cultural heritage preservation efforts
3	Recognition and promotion of cultural industries	Fostering and promotion of multilingualism
4	---	Presence of local culture and languages in digital media
5	---	Recognition and promotion of cultural industries

Freedom of expression

<u>Rank</u>	<u>Round 1</u>	<u>Round 2</u>
1	Social climate for free discussion and exchange	Social climate for free discussion and exchange
2	Diversity, sustainability and independence of media channels	Diversity, sustainability and independence of media channels
3	Independence, effectiveness and transparency of public broadcasting services	Independence, effectiveness and transparency of public broadcasting services
4	Professional standards amongst media practitioners	Professional standards amongst media practitioners
5	'...	Media (on/off-line) regulatory frameworks

Table: Change in composition and rank of criteria /indicators for selected constructs between Rounds

<i>Q19. Taken together as a group, in your view, how adequately does the revised set of five indicators serve as proxies for assessing Freedom of Expression in the city?</i>	Very Poor	Poor	Fair	Good	Very Good
<i>Rating in Round 1</i>	0	1	0	12	14
<i>Rating in Round 2</i>	0	0	3	12	12
<i>Number Selecting Rating</i>	0	1	3	0	2
<i>Net person change</i>	3	% Change < 15% - Between round consensus has stabilized. No further rounds are needed.			
<i>Number of Participants</i>	27				
<i>% Change</i>	11.1				

<i>Q16. Taken together as a group, in your view, how adequately does the revised set of five indicators serve as proxies for assessing the level of Openness in the city?</i>	Very Poor	Poor	Fair	Good	Very Good
<i>Rating in Round 1</i>	0	1	2	15	9
<i>Rating in Round 2</i>	0	0	3	16	8
<i>Absolute Difference in Rating</i>	0	1	1	1	1
<i>Net person change</i>	2	% Change < 15% - Between round consensus has stabilized. No further rounds are needed.			
<i>Number of Participants</i>	27				
<i>% Change</i>	7.4				

<i>From a big-picture or macro-level policy perspective how do you assess the Proposed Knowledge-based Development Model's representation of the role of knowledge in driving or supporting development?</i>	Very Poor	Poor	Fair	Good	Very Good
<i>Rating in Round 2</i>	0	0	4	16	6
<i>Rating in Round 3</i>	1	1	3	15	6
<i>Absolute change in rating</i>	1	1	1	1	0
<i>Net person change</i>	2	% change < 15% and indicates that consensus has stabilized. No further rounds needed.			
<i>Number of participants</i>	26				
<i>% Change</i>	7.69%				

Table: Between Round stability of opinions for selected constructs in the model

SUMMARY DELPHI ROUND REPORTS

Results from Round 1 of the Delphi Study

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Acknowledgements

I would like to again express my sincere appreciation to all panelists for their inputs to Round 1. I greatly value the time, mental effort and your numerous personal communications, as well as words of encouragement, whether by e-mail, Skype, telephone or face to face over lunch, dinner or coffee that I have received. The insights and perspectives, research papers, websites and others that you have shared and the time that that you have invested have brought tremendous value to this endeavor. For this, I am truly grateful.

I look forward to your continued support in Round 2.

Once again, thank you so very much!

Paul 😊

SUMMARY ROUND 1 REPORT AND FINDINGS

Overview of the Delphi Study and its Purpose

Knowledge Societies as well as the application and leveraging of knowledge as an organizing principle for societal development are new areas of interest that present conceptual and operational challenges. This international Delphi study seeks to contribute to policy efforts by developing a model and indicators to support assessment of a city's knowledge maturity.

The study considers knowledge maturity to be a society's ability to create conditions that stimulate, harness and direct the potential of its members towards creating and leveraging its tangible and intangible assets in order to realize the full potential of its members, to address societal challenges and realize its goals and vision.

As explained in the background paper, the study hypothesizes that knowledge maturity is influenced by nine constructs - human rights and needs, pluralism, equity, inclusion, openness, freedom of expression, universal access to information, cultural and linguistic diversity and education for all - identified in UNESCO's Knowledge Societies Conceptual Framework.

This Delphi study therefore seeks to:

- Identify a set of indicators that enable each construct derived from the UNESCO Knowledge Societies Conceptual Framework to be qualitatively assessed, and
- Validate a proposed knowledge-based development model.

Developing indicators is never an easy task and inevitably involves a number of trade-offs. One Delphi panelists participating in Round 1 succinctly described these challenges:

As a results measurement specialist myself (well, that has been my job for quite a number of years) indicator selection is the most arduous task, given the tensions between comprehensiveness and brevity, complexity and understandability, representativeness and cohesion. I will be interested in looking at the final output and how this can be contextualized.

(Personal communication from a Delphi Panelists, July 2015)

The comments and inputs received in the first round from 42 participating panelists grounded in different disciplinary, experiential, societal/regional contexts and other perspectives have amply demonstrated the challenge of managing these tensions.

The final knowledge-based development model will assess each construct by evaluating the selected indicators using a four-level maturity scale that takes into account people, processes as well as outcomes. Cities in the developing countries of Africa and Asia are taken as the societal units of focus. It is expected that this validated model will provide a policy tool for developing understanding of the city and its actors, context and concerns and allow its knowledge maturity to

be assessed. This baseline will enable, the identification of follow-up steps for possible enhancement and improvement of its knowledge maturity.

When operationalized the model will by necessity consider both quantitative and qualitative aspects. It will collect the views of societal stakeholders so as to develop a rich understanding of the aspirations, values, concerns, and interaction dynamics amongst stakeholder groups as well as other contextual factors. The model will provide a departure point for exploration and discussion. It will help policy makers to identify and advance feasible actions and prioritize efforts to harness their tangible and intangible resources to address societal challenges.

Characteristics of pre-qualified expert panelists

A total of 63 panelists were pre-qualified to participate in the Delphi panel. Of this grouping 21 were female and 42 were males. 87% of the panelists had at least 10 years of professional experience with over 45% holding CEO or equivalent senior management and strategic institutional roles.

Participants represented a wide range of disciplinary backgrounds – knowledge management, computer science, international development, economics and urban policy amongst others. This heterogeneity provided a rich cross-section of disciplinary views for enhancing the study. This diversity also meant that it juxtaposed experts with conflicting epistemological and ontological views. This diversity is expected make the process of consensus building more difficult, but also lead to more robust conclusions.

Pre-qualified panelists came from academia, public sector, private sector, civil society and international organizations. Some 22% of these panelists had experience in at last two of these sectors. The majority of these panelists, 57%, had affiliations with academic and research institutions including universities and think tanks. Almost 30% of the participants had private sector experiences, mainly in the consulting sector. Experience in international organizations (such as the United Nations), civil society organizations and national/municipal governments comprised 22%, 19% and 11% respectively.

92% of participants held at least a Masters level degree with 40% of pre-qualified persons holding a PhD.

46% of the panelists currently live in a developing country and 68% of all panelists have professional work experience in Asia or Sub-Saharan Africa. Given the focus of the study on developing a knowledge societies model for cities in the developing countries of Asia and Africa, this high level of participation of experts knowledgeable about the target regions provides further validity for the study's findings.

Participants were recognized experts in their fields. The majority of the panelist have been involved either as authors, editors or as reviewers of published, peer-reviewed professional publications, scholarly journals or policy reports and white papers or books. Most of the panelists have published.

The pre-qualified pool of Delphi panelists is a highly qualified, experienced, internationally diverse and heterogeneous group of experts.

Participation in Round 1 of the Delphi Study

The first round of the Delphi study was scheduled to be conducted between May 11 and May 21, 2015. As a result of requests from several panelists the survey was extended initially until May 30 and closed on 22 June, 2015. Although it was the researcher's intention to return survey results by July 6, a medical emergency delayed the reporter from reporting of findings until 17 July. Of the 63 pre-qualified expert panelists, 42 expert participated in the study with 32 experts submitting completed questionnaires.

Subsequent questionnaires will be significantly shorter, requiring less effort and time by panelists. This is expected to increase both the level of participation and survey completion rates.

Assessing Consensus Amongst Panelists

Both qualitative and quantitative approaches supported the process of assessing consensus in the first round.

Qualitative assessment

Qualitative assessment involved the review and thematic grouping of comments from participants. On this basis a general sense of the level of satisfaction with the model and indicator sets could be discerned. These comments served to identify approaches and directions for making improvements.

Findings from the qualitative assessment of consensus

The qualitative assessment revealed a broad and rich range of perspectives. Given the heterogeneity of the panelists' this was not surprising. Some experts expressed satisfaction with the model, the modeling approach and the underlying assumptions. On the other hands some experts expressed reservations and questioned the model's suitability as well as its underlying assumptions and approach to addressing this complex issue. Other experts proposed modifications they felt could serve to enhance the model's clarity and make visible inherent interdependencies and factors not fully captured or expressed in the proposed model. The updated model presented in Figure 1 presents the researcher effort to capture, integrate and reflect these proposals.

Similar trends also emerged from the panelists' review of the proposed indicator sets for each construct. On the basis of panelists' recommendations additional indicators were proposed for constructs and these are summarized in Table 1. The Appendix contains a detailed question by question analysis of the survey responses.

Quantitative Assessment

For questions where quantitative data is available, two approaches were used. The first approach determined whether a given percentage of the experts considered the model or indicator set to be either good or very good (Holey et al., 2007; Linstone & Turoff, 1975). For heterogeneous panels where large variations in perspective can be expected an initial 51% level for consensus is appropriate. The second approach used the Average Percentage of Majority Opinions (APMO) method (Cottam et al., 2004; Kapoor, 1987). The APMO formula (See Equation 1) uses the actual survey responses to determine a lower bound for consensus. Panelists' rankings of poor and very poor were taken to represent disagreement; rankings of good and very good were taken as agreement; while rankings of fair or neutral were taken to represent undecided. On this basis Table 2 was prepared.

These quantitative measures of consensus were not applied to the self-assessment of skills (survey questions 38 and 39) or to the first three questions of the survey as the structure and intent of these questions is different to the other quantitative questions contained in the survey.

Calculation of APMO threshold consensus level

EQUATION 1: AVERAGE PERCENTAGE OF MAJORITY OPINIONS (COTTAM ET AL., 2004)

$$\text{APMO} = \frac{\text{Majority Agreements} + \text{Majority Disagreements}}{\text{S opinions expressed}}$$

Using Equation 1 and the values from Table 1:

$$\begin{aligned} \text{APMO} &= \frac{253 + 17}{352} \\ &= 0.767 \end{aligned}$$

76.7% represents the minimum level of agreement needed for consensus.

Findings from the quantitative assessment of consensus

On the basis of the percentage of agreement (51%), the adequacy of all indicators and the model was confirmed.

The APMO method provided a more conservative approach to the assessment of consensus. Using this measure the proposed indicator sets for Human Rights and Needs, Openness and Freedom of Expression were judged adequate with consensus levels of 87.9%, 81.3% and 87.5% respectively, achieved.

The indicator sets for Inclusion, Equity and Education for All each received support of 75.0% indicating a level of support verging on consensus.

The Indicator sets for Pluralism, Universal Access to Information and Cultural and Linguistic Diversity achieved agreement levels of 65.5%, 56.3% and 71.9 % respectively.

The proposed knowledge-based development model achieved 57.6% level of agreement with regard to representing the underlying constructs in the UNESCO Framework and the role of knowledge in achieving societal goals.

Revisions to the Proposed Knowledge-based Development Model & Indicator Sets

A number of revisions were made to the model in line with the proposals received. To enhance understanding of the model, symbols such as connecting lines were harmonized. A “key” was also incorporated in the model so as to assist with the interpretation of the relations between components.

The comments by panelists, as well as the existing body of research, points to the interdependence and mutually reinforcing nature of the nine model constructs. While the directionality and strength of these influences cannot be ascertained at this time, panelists nevertheless underscored the

importance of indicating these interactions. In a similar way panelists also highlighted the contribution of knowledge maturity to the societal “stock” of intangible and tangible assets. These key points have been duly incorporated into the model. In a similar manner the important role of collaboration as a distinct knowledge process has also been noted and reflected.

The updated knowledge-based development model is presented in Figure 1.

Panelists’ Self-assessment of Expertise

For the nine constructs assessed in this Delphi study 94% of panelists self-reported their level of competency as adequate or greater.

The highest self-reported levels of competency was reported for the constructs of Equity and Inclusion for which 97% of panelists had a competency level of adequate or greater. The lowest level of self-reported expertise was associated with the Cultural and Linguistic Diversity Construct for which only 84% of participants reported that their level of knowledge was adequate or greater.

Focus of the Second Round of the Delphi Panel

The Second round of the Delphi study will examine a revised version of the proposed knowledge-based development model that takes into account panelists’ views from Round 1 (See figure 1) as well as an updated set of indicators that takes into account the qualitative and quantitative assessment of consensus (see Tables 1 and 2).

Round 2 will be significantly shorter, requiring less effort and time by panelists. The shorter survey is expected to increase both the number of participating experts and survey completion rates.

A detailed discussion of the findings from each question as well as comments by the researcher may be found in the Appendix.

TABLE 1: UPDATED SET OF PROPOSED INDICATORS FOR EACH CONSTRUCT BASED ON ROUND 1 COMMENTS FROM DELPHI PANELISTS

Construct	Initial Indicator Set	Panelists' satisfaction (%)	Indicators Proposed by Panelists	Indicators for Second Round ¹
Human Rights and Needs	Accountability; Awareness; Non-discrimination, Participation; Structural measures	87.9	Equity; enforceability of structural measures; openness; relationship capital; alignment; economic opportunities / capabilities; cultural context; environmental milieu (context); economic / political stability; rule of law.	None - The initial set of indicators were assessed as adequate by panelists.
Pluralism	Attitudes (Att.) to disability, ethnicity & race; Att. to immigrants / migrants; Att. to religious political values; Att. to coalition building	65.5	Economic inequality; minorities; attitudes to uncertainty (open mind); att. to sexual preferences; att. to non-believers (religious); existing behaviors and social structures; Att. to economic status; att. to gender equality; assemblages; attractors; modulators; att. to internally displaced communities; att. to urban heritage; att. to minimum needs; availability of health care and services for the aged; att. to creative class (Richard Florida, 2002).	A set of five to be selected from the Initial set of indicators plus the following proposed ones: attitudes to economic status; attitudes to gender equality; attitudes to sexual preferences/ orientations.
Inclusion	Access to safe and decent work opportunities; support for women's participation in economic activities; Access to basic social services; Access to civic and political spaces	75.0	Equitable access to basic social services; gender equity in economic activity; information literacy; youth participation in economic activity; vulnerability; social capital; participation of persons with disabilities; access to inclusive education; access to quality information and knowledge	A fifth indicator to be selected from amongst the following three (3) indicators: Level of support for (losf) handicapped person's participation in economic activities; losf participation of youth in economic activities; losf (access to credit/training) for entrepreneurial activity.
Equity	Access to basic social services; Evenness in distribution of social costs / benefits; Gender mainstreaming in policy; Adequate communication and fair access to social services and goods	75.0	Access to land ownership; access to reproductive services rights, including abortion and planned parenthood; access to entrepreneurial opportunities; level of state theft; level of theft; Access to the right knowledge	A fifth indicator to be selected from the following three (3) indicators: Access to land ownership; Access to reproductive health services; Access to entrepreneurial opportunities (including credit / finance and training)
Openness	Transparency and participation in public policy/decision - making processes; Willingness to explore unconventional approaches to solving societal challenges; Promotion of open standards	81.3	Level of fundamentalism; strength of relations with other cities and nations; strength of social ties; willingness to adopt innovations; level of openness to trade, internet and commerce; level of collaboration	Selection from Transparency in public policy/decision-making processes; Participation in public policy/decision-making processes; Protection of personal privacy and personal data
Freedom of Expression	Social climate for free discussion and exchange; Diversity, sustainability and independence of media channels; Professional standards amongst media practitioners; Independence, effectiveness and transparency of public broadcasting services.	87.5	Number of journalists killed; regulatory support for censorship; protection of privacy; public space for free discussion and assembly (consultation, town meetings, demonstrations etc.); continued professional development of media practitioners; ethical; independence, effectiveness and transparency of all broadcast services; access to legal remedies for libel and defamation; regulation of powerful media and on-line platforms; standards of information transparency; Access to Internet and web development capabilities; information literacy; media accountability/responsibility.	Assessment of updated set with the new indicator proposed by the Delphi panel: Media (on/off-line) regulatory frameworks.
Universal Access to Information	Adequacy and accessibility of the public transportation system; Availability of on-line access to government services; Affordability of Internet services; Efforts to build human capacity to use ICT	56.3	Access to basic education; availability of media channels for free exchange of ideas and information; ability to process information; support for inter-generational information and knowledge transfer; enabling regulatory environment; presence of knowledge clusters and communities of practice; ICT policy on infrastructure, content, skills, language; level of resource allocation to support human capacity to use ICT; Support for traditional knowledge systems; fast access to internet services; access to affordable power sources; ability to limit morally disruptive on-line behavior (pornography, religious defamation); literacy levels and human capacity to use ICT; local relevance of content	Selection of top five (5) from the following indicator set: adequacy and accessibility of the public transportation system; availability of on-line access to government services; affordability of Internet services; efforts to build human capacity to use ICT; affordability, accessibility and safety of internet services; access to reliable and affordable power supply; support for traditional/local knowledge (preservation, valorization and use); presence of knowledge clusters (local/regional) and communities of practice
Cultural & Linguistic Diversity	Support for city's breadth of heritage and cultural expressions; Fostering and promotion of multilingualism; Recognition and promotion of cultural industries	71.9	Education policies; textbook content; adoption/recognition of national languages; Immigration policies; Recognition of cultural ceremonies; level of cultural heritage preservation efforts; level of capacity building in cultural expression sector; presentation of tangible and intangible culture in digital media; support for intercultural dialogue and cooperation initiatives; city resource and programmatic support for multiculturalism; promotion of traditional languages;	level of cultural heritage preservation efforts; level of capacity building in cultural expression sector; fostering and promotion of multilingualism; recognition and promotion of cultural industries; presence of local culture and languages in digital media
Education for All	Ability of the city to nurture its human talent; Ability of the city to attract and retain talent; Support for global citizenship education; Effort to enhance citizens' media and information literacy	75.0	Life-long learning; support for adaptive skills in response to city development and emergence of new challenges; equality in access to education and education outcomes; inclusion of cultural values in basic education curricula; support for inter-generational learning; tolerance across political, religious, ethnic and linguistic lines; Access and opportunities for pre-primary primary and vocational levels;	Assessment of updated set with the new indicator proposed by the Delphi panel: support for inter-generational transfer of traditional and local knowledge

¹ Detailed researcher's comments are contained in the Appendix

TABLE 2: LEVEL OF CONSENSUS ACHIEVED DURING THE FIRST ROUND OF THE DELPHI STUDY USING APMO METHOD (COTTAM ET AL., 2004).

Question	No. Agreeing	% Agreeing	No. Disagreeing	% Disagreeing	No. Undecided	No. of Opinions	Consensus (Yes /No)
Q4. Based on the background information provided, how well does the knowledge-based development model capture the concepts presented in the UNESCO's Knowledge Societies Conceptual Framework?	19	57.6	1	39.4	13	33	No
Q7. From a big-picture or macro-level policy perspective how do you assess the Proposed Knowledge-based Development Model's representation of the role of knowledge in driving or supporting development?	19	57.6	2	36.4	12	33	No
Q11. Taken together as a group, in your view, how adequately do these five indicators serve as proxies for assessing the Human Rights and Needs climate/environment of a city?	29	87.9	0	12.1	4	33	Yes
Q14. Taken together as a group, in your view, how adequately do these four indicators serve as proxies for assessing the Pluralism climate/environment of a city?	19	65.5	0	34.5	10	29	No
Q17. Taken together as a group, in your view, how adequately do these four proposed indicators serve as proxies for assessing the level of Inclusion in the city?	24	75.0	1	21.9	7	32	No
Q20. Taken together as a group, in your view, how adequately do these four proposed indicators serve as proxies for assessing the level of Equity in the city?	24	75.0	2	18.8	6	32	No
Q23. Taken together as a group, in your view, how adequately do these three indicators serve as proxies for assessing the level of Openness in the city?	26	81.3	2	12.5	4	32	Yes
Q26. Taken together as a group, in your view, how adequately do these four indicators serve as proxies for assessing Freedom of Expression in the city?	28	87.5	2	6.3	2	32	Yes
Q29. Taken together as a group, in your view, how adequately do the four proposed indicators serve as proxies for assessing Universal Access to Information in the city?	18	56.3	4	3.1	1	32	No
Q32. Taken together as a group, in your view, how adequately do these three proposed indicators serve as proxies for assessing the Cultural & Linguistic Diversity of the city?	23	71.9	1	25.0	8	32	No
Q35. Taken together as a group, in your view, how adequately do these four proposed indicators serve as proxies for assessing the Education for All construct within the city?	24	75.0	2	18.8	6	32	No
Totals	253		17		73	352	

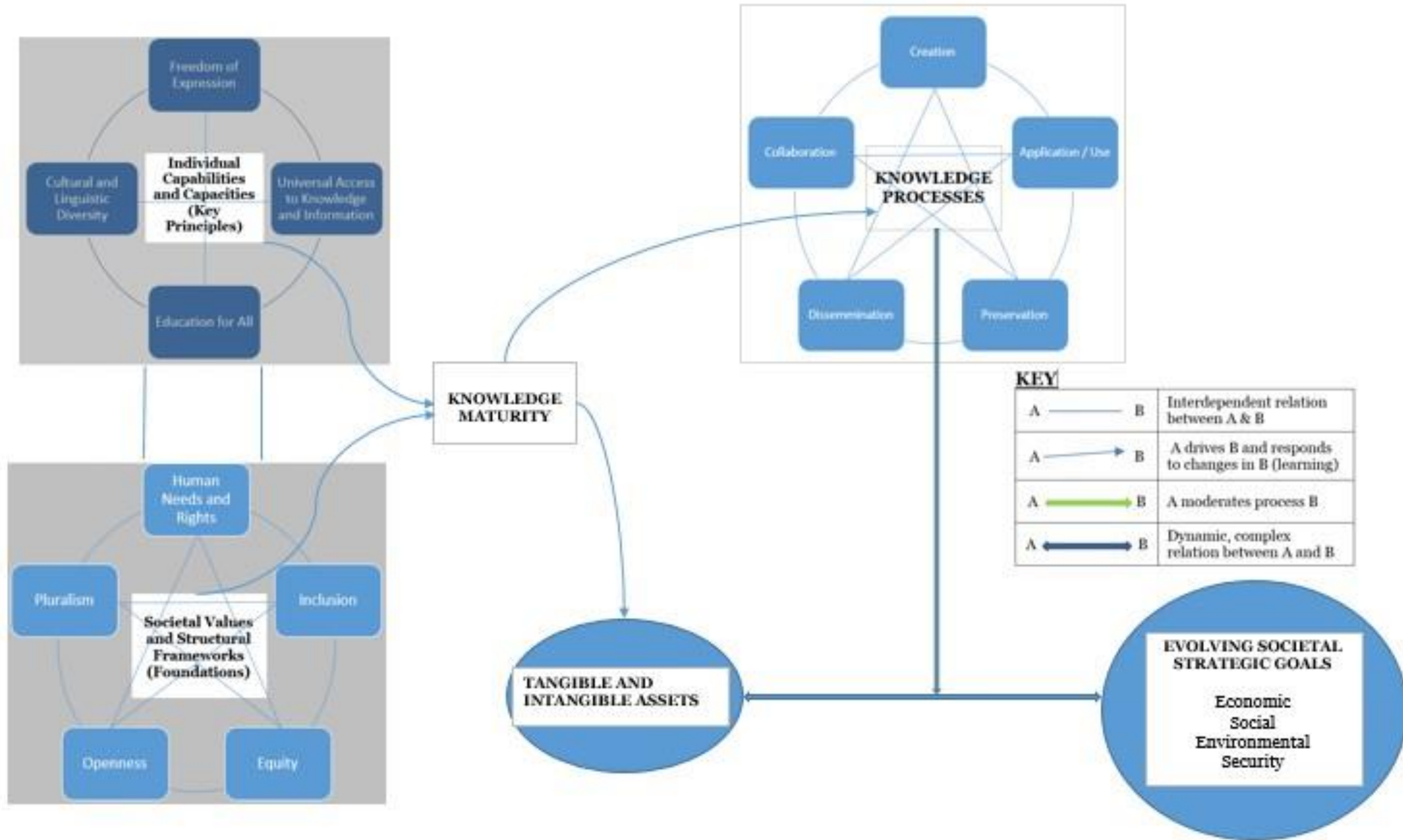


FIGURE 1: REVISED KNOWLEDGE-BASED DEVELOPMENT MODEL FOLLOWING COMMENTS RECEIVED FROM DELPHI PANELISTS

APPENDIX

Part 1 - Research Instrument and Interview Protocol

Q1. *The purpose and conduct of this research study has been explained to me. I willingly agree to participate in this interview and to have my contributions captured, stored and processed.*

TABLE 3: LEVEL OF UNDERSTANDING AMONGST PANELISTS OF THE PURPOSE AND CONDUCT OF THE RESEARCH.

	Yes	No
%	100.0	0.0

Q2. May your name be included in the list of Panelists?

TABLE 4: LEVEL OF WILLINGNESS AMONGST PANELISTS TO BE PUBLICLY ASSOCIATED WITH THE STUDY.

	Yes	No
%	100.0	0.0

Q3. Would you like a copy of the final study and/or any academic papers that may result from this Delphi study?

TABLE 5: LEVEL OF INTEREST AMONGST PANELISTS IN ITS FINDINGS AND OUTCOMES.

	Yes	No
%	100.0	0.0

Part 2 - Evaluating the proposed Knowledge-based Development Model

Q4. *Based on the background information provided, how well does the knowledge-based development model capture the concepts presented in the UNESCO's Knowledge Societies Conceptual Framework?*

TABLE 6: PANELISTS EVALUATION OF THE KNOWLEDGE-BASED DEVELOPMENT MODEL'S ABILITY TO CAPTURE CONCEPTS IN UNESCO'S KNOWLEDGE SOCIETIES CONCEPTUAL FRAMEWORK.

	Very Poor	Poor	Fair	Good	Very Good
%	0	3	39.4	42.4	15.2

Table 5 presents the views of the experts polled in the survey, 57.6% of these experts expressed the view that the proposed Knowledge-based Development Model was either good or very good in

capturing the essential components of the underlying UNESCO Knowledge Societies Conceptual Framework.

Q5. *Please explain your reasoning for the choice you made in the previous question.*

Experts who thought the model to be a good or very good reflection of the underlying UNESCO framework expressed views such as:

- *I think it clearly mapped out how individual knowledge connects to social goals and how processes are to be formalized and aligned to ensure that we are able to achieve the vision of a "knowledge" society.*
- *I prefer the knowledge-based development model over the UNESCO Knowledge Societies Conceptual Framework, for the simple reason that it focuses on individual capabilities and capacities. That is missing from the UNESCOs framework and it makes it very general. Gender equality is missing in both frameworks and I think they should be added.*
- *Clear presentation of building blocks and relationships*
- *The model captures the UNESCO concepts in a well-balanced manner.*

Some experts chose not to address the question of alignment/coherence between the proposed model and the UNESCO framework, focusing rather on other aspects, sometimes outside the scope of the current study:

- *It does not address itself to processes of critical interrogation and re-organization of knowledge types (and integration) as would be expected in between many indigenous societies dealing with foreign ways of knowing. Far often models like this do not adequately address local knowledge, ways of knowing and traditions while posturing inclusivity concepts.*
- *The use and misuse of institutional and corporate power in producing, manipulating and disseminating information is neglected.*
- *On paper and in theory, it works well, in reality however, there are elements, such as cost, social movements and having a basic foundations from which to start that heavily impacts the ability of the model to properly translated into reality.*

Some experts expressed difficulty in understanding the UNESCO framework and proposed model which suggested the need for improving its graphical depictions:

- *The diagrams are confusing as well as the flowlines.*
- *The schema for the "Proposed Knowledge-based Development Model" is a bit confusing with arrows going into other arrows.*
- *This KBDM CAN be considered good, even if the aim of this scheme didn't seem clear.*

Some experts on the other hand proposed improvements that could enhance alignment with the UNESCO model:

- *I think there's a direct connection also between knowledge maturity and tangible & intangible assets.*

- *Maturity Model is a black box. The arrows are unclear, one arrow pointing on another arrow, what does it mean? Why are the key values not objectives? Are human rights just an Input for economic, social, environmental success?*

Q6. *What changes, if any, in your view, could improve the Proposed Knowledge-based Development Model's representation of the UNESCO Knowledge Societies Conceptual Framework?*

Proposed improvements focused on:

a) Clarifying and improving the graphical representation of the model:

- *Improve the flow lines, color shading, sizes of the circles. The enumerated words can be placed in another diagram.*
- *At the moment not sure what different width of lines, different shapes, and colors mean.*

b) Making visible the inter-linkages and inter-dependencies between model components:

- *Is there a link between assets and knowledge maturity and/or societal values and individual capabilities?*
- *Another arrow from Societal Strategic goals, back to Knowledge processes as this is a continuous activity it doesn't end.*
- *I think it would be useful with some feedback loops.*

c) Introducing new aspects or concepts that are not explicit in the underlying UNESCO Framework. In some cases these are already being addressed through specific constructs in the model, are locale-specific or beyond the model's scope:

- *Gender equality is missing in both frameworks and I think they should be added.*
- *I think I just miss two things in the knowledge-based development model - a regard for context (political, social, economic), and the presence or absence of incentives. I wonder how this can be incorporated into the structure.*
- *Need to see representation of indigenous knowledge and how this is being connected to science and technology in tackling sustainable development.*
- *Hmm what about the free market with perfect competition, the right/role of associations, rule of law?*
- *Need to see representation of indigenous knowledge and how this is being connected to science and technology in tackling sustainable development.*

Q7. *From a big-picture or macro-level policy perspective how do you assess the Proposed Knowledge-based Development Model's representation of the role of knowledge in driving or supporting development?*

TABLE 7: PANELISTS' EVALUATION OF THE KNOWLEDGE-BASED DEVELOPMENT MODEL'S REPRESENTATION OF KNOWLEDGE IN SUPPORTING DEVELOPMENT

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
%	3	3	36.4	51.5	6.1

Table 6 presents the views of the experts polled in the survey which indicate agreement of 56.6 % of panelists.

Q8. *Please explain your choice in the previous question. What suggestions do you have, if any, for improving the Proposed Knowledge-based Development Model?*

A number of experts expressed satisfaction with the model:

- *It expresses a broad and relevant view of the needs for K-based development.*
- *The process is clear.*
- *I believe the model makes a lot of sense.*
- *Without doubt, knowledge maturity is like absorptive capacity - an important intervening variable.*
- *The proposed knowledge-based development model's representation is in line with UNESCO Knowledge Societies Conceptual Framework.*

Other experts drew attention to what they saw as limitations of the model, pointing to the role played by other factors in shaping development outcomes as well as specific needs of some regions:

- *I am not very sure whether the model clearly captures both external processes in knowledge creation (that may not necessarily be related or akin to the knowledge creation) or what economists would call externalities are captured in the framework.*
- *It makes all the wrong assumptions about knowledge, its nature and social interaction*
- *Degree of inclusivity and plurality relevant to developing country contexts especially in Africa not self-evident.*
- *I think knowledge is very important but not the only factor in development. Others could be: war/peace, stability, trade, resources, environment, critical mass, time - and luck!*

Suggestions for improvement included:

- *Maybe the knowledge processes, the knowledge maturity, and the tangible/intangible assets all together can meet in one pile (named development process?) and after it are the goals.*
- *Wisdom should be considered as an important element of understanding the "macro" context of "Development".*
- *While the UNESCO framework is strong on the values and guiding principles (and I strongly support that), it is relatively weak on the characterization of distinctive knowledge-based value creation. A resulting model must somehow compensate functionally such shortcoming.*

Comment by researcher: A revised depiction of the knowledge-based development model that draws on the inputs of the panelist will be presented in the second round.

Q9. *Are there other essential constructs that should be included in the Proposed Knowledge-based Development Model? Please take into account UNESCO's perspective of a human-centered vision of Knowledge Societies - the nine constructs in the UNESCO Framework - Pluralism, Inclusion, Equity, Openness, Human Needs & Rights, Freedom of Expression, Universal Access, Diversity, Education for All - and their contribution to the creation of social, structural and human capital, as outlined.*

TABLE 8: SHOULD ADDITIONAL CONSTRUCTS BE INCLUDED IN THE PROPOSED MODEL?

	Yes	No
%	59.4	40.6

Table 7 presents the opinions of experts regarding the inclusion of new constructs in the model.

Q10. Please explain your choice in the previous question. If you wish to propose additional constructs, please indicate the name(s) of the construct(s) and also provide its/their definition(s).

Some experts felt that the proposed nine constructs were adequate:

- *I think the positive values mentioned are enough.*
- *The nine constructs are comprehensive*
- *Constructs adequately cover essential components*
- *The nine constructs in the conceptual framework capture the essential elements in the model.*

Other experts proposed additional constructs, but did not provide definitions for these terms. Constructs proposed by experts were:

- *gender, technology, capacity to think for oneself, security (society and person), governance, learning as connection, humanism, sustainability, gender equality, basic education, levels of know-how in a society, absorptive capacity, education.*

However, some experts did not support the modeling approach adopted:

- *If you start in the wrong place there is no point in continuing.*
- *I believe IC should be based explicitly upon five different/separate capitals: + human capital, + organizational capital, + relationship capital, + organizational capital, + structural capital. By rolling these into 3 capitals, you may have diluted a means of delineating separate strategies for execution.*
- *I just explained that it need to simplify this model.*

Comment by researcher: In the second round the Delphi panel will focus on improving the presentation of the current model taking into account the comments under Question 8. Once the presentation is agreed addition of new constructs may be considered.

Part 3 - Assessment of Proposed Indicator Sets

3.1 Assessment of the Human Rights and Needs Construct

Q11. Taken together as a group, in your view, how adequately do these five indicators serve as proxies for assessing the Human Rights and Needs climate/environment of a city?

TABLE 9: HOW ADEQUATELY DO THE PROPOSED INDICATORS ASSESS THE HUMAN RIGHTS AND NEEDS CLIMATE/ENVIRONMENT OF A CITY?

	Very Poor	Poor	Fair	Good	Very Good
%	0	0	12.1	60.6	27.3

Table 8 presents the opinions of experts regarding the proposed set of indicators. 87.9% of the experts expressed satisfaction with indicators proposed based on the academic literature.

Q12. *Please arrange the proposed indicators in terms of your perceived importance of their ability to assess the Human Needs and Rights climate/environment of the city [1 most important, 5 - least important].*

As indicated below in Table 9 and Figure 1, experts considered Awareness to be the most important indicator of the broader human rights climate, with Structural Measures viewed as the least important. Participation was assessed as being marginally more important than Accountability followed by Non-discrimination.

TABLE 10: IMPORTANCE RANKINGS ASSIGNED TO THE INDICATORS BY DELPHI PANELISTS

	1	2	3	4	5
Accountability	24.24% 8	12.12% 4	21.21% 7	21.21% 7	21.21% 7
Awareness	51.52% 17	21.21% 7	15.15% 5	6.06% 2	6.06% 2
Non-discrimination	3.03% 1	27.27% 9	21.21% 7	27.27% 9	21.21% 7
Participation	6.06% 2	30.30% 10	33.33% 11	24.24% 8	6.06% 2
Structural Measures	15.15% 5	9.09% 3	9.09% 3	21.21% 7	45.45% 15

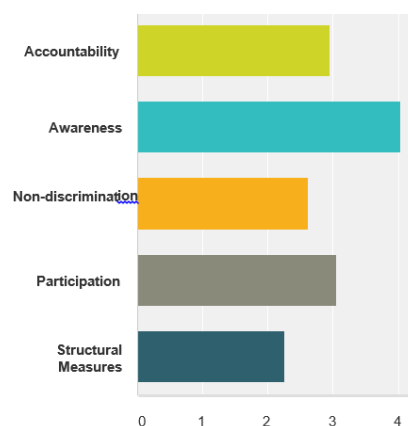


FIGURE 2: WEIGHTED RANKINGS OF INDICATORS²

Q13. *Please provide suggestions for improving assessment of the Human Rights & Needs construct. For example: a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s); b) Identify and*

² Weighted rankings take into account the number of vote assigned to the indicator and its relative importance (most important 5 points, least important 1 point) as judged by panelists.

explain any inadequacies or redundancies in the indicators proposed for this construct; c) Any other comments you may wish to provide.

A number of experts expressed satisfaction with the proposed macro-level indicators:

- *I think these work well. They relate nicely also to concepts such as Liveable Cities and Smart Cities.*
- *Seems fine as is...*
- *No other additions*
- *[the] Five indicators seem adequate to measure this construct.*

Some experts proposed indicators for assessing the Human Rights and Needs construct that are covered under other constructs in the model. This further highlights the underlying synergies, interdependencies and mutually reinforcing roles of constructs (De Beco, 2008; Sharma, 2008, 2009; OHCHR, 2012), for example:

- *Include "Equity" as an indicator and Equity to ensure equal rights in law*
- *Openness and flexibility of the local political system*
- *Alignment: Relates to the ability of share a common vision of the main problems to be solved and the processes to do so (covered under pluralism)*
- *Culture and context are very important and specific indicators that we must always consider in order to understand how a territory works.*
- *I personally feel only (probably mainly subjectively) that Awareness and Non-discrimination are very basic, and that probably they must be embodied in some Structural Measures to be operational.*
- *Note that these work as a set; that is, without awareness none of the others work; without accountability you can talk all you want about non-discrimination; participation is described as an "ability", yet without awareness and non-discrimination (and actions based on non-discrimination) the "ability" is meaningless, that is, (1) the flow of "knowledge" such that individuals know how to participate and what is in their best interest to support; and (2) the lack of fear and confidence to do so; which both add up to self-empowerment. Re the ability to assess, again, individually they can be skewed; as a set they convey a closer story of reality.*

A number of experts expressed concern about the ability of the indicators to serve as good measures of outcome alluding to the fact that while having laws and policies is important the extent and effectiveness of their implementation is critical:

- *Structural measures is good, and is a duty bearer indicator, but what about enforceability of structural measures? This is problematic largely in developing countries.*
- *The United Nations Human Rights and Needs framework is well documented and relatively robust - where it falters is in the implementation, protection of rights and the monitoring of abuses - again, this is very much related to cost and nation's abilities to adhere to the framework from a national institutional perspective. One can draw parallels between a nation have rock solid laws, but no means to reinforce them.*
- *In Accountability the inadequacy is that the State and organs may observe human rights and needs but the Citizens may not always do so one to another, hence Awareness must adequately communicated that the State does not have to police citizen to respect human rights especially in Africa.*

Comments by researcher: There are 10 international human rights treaties that cover a range of issues from protection against torture, to the rights of the children and persons with disabilities. Two specific human rights treaties are addressed to issues of social, economic, civic, political and cultural rights. Responsibilities for monitoring the 10 treaties are allocated to specific UN bodies and committees tasked with conducting detailed assessments. The indicators proposed are intended to provide a macro-level overview that allows the prevailing human rights conditions to be characterized.

While an important concern, at this stage the key task is to identify what to measure. As indicated in Table 3, (reproduced below as Table 10) of the document Background Information for Delphi Panelists the 4-level scale will assess process and outcome aspects associated with the specific indicators.

TABLE 11: MATURITY LEVELS TO BE USED IN THE QUALITATIVE ASSESSMENT OF INDICATORS (SEE TABLE 3 IN DOCUMENT BACKGROUND INFORMATION FOR PANELISTS)

Increasing maturity	Maturity Levels		Features
	1	Initial	Characterized by adhoc responses; limited human and institutional capabilities to plan, develop and implement policies; top-down decision-making.
	2	Defined	Need for policies, processes and human-capacity recognized and are but resource constraints lack of human and institutional capacity challenges and systems. Still dependent on external resources.
	3	Managed	Enabling environment supported by adequate processes, policies, human and institutional capacity as well as resources. Seeking to find and adapt best practices. Capabilities for medium term planning
	4	Integrated	Recognized as best in class in one or more areas by other cities. Policies, process supported by institutional capacities, capable of long range planning and setting stretch goals.

One expert pointed out that the proposed indicators address more strongly the human rights aspect than the human needs dimension.

- *The suggested indicators relate to human rights strongly and less strongly to human needs; A conceptual clarification on human needs is necessary as human needs can also be defined in terms of values, psychological or material needs.*

There is not yet agreement on an international normative framework of human needs and corresponding minimum acceptable levels. As the model is developed from the literature the human rights aspects have been emphasized.

There was also some confusion about the word “rights” within the concept of Human Rights, which some experts seem to interpret as an unfettered freedom and accordingly felt the need to modify this concept by introducing the concept of “responsibility”.

- *Adding "Responsibilities" to Human Needs & Rights is significant.*

However, the international conventions are unequivocally clear that each right also has attendant responsibilities.

In light of the above, as well as the results of the APMO, no additional indicators were taken on board. This construct will not be assessed in the second round

3.2 Assessment of the Pluralism Construct

Q14. Taken together as a group, in your view, how adequately do these four indicators serve as proxies for assessing the Pluralism climate/environment of a city?

TABLE 12: HOW ADEQUATELY DO THE PROPOSED INDICATORS ASSESS THE PLURALISM CLIMATE/ENVIRONMENT OF A CITY?

	Very Poor	Poor	Fair	Good	Very Good
%	0	0	34.5	48.3	17.2

Table 11 presents the opinions of experts regarding the proposed set of indicators. 65.5% of the experts expressed satisfaction with indicators proposed based on the academic literature.

Q15. Please arrange the proposed indicators in terms of your perceived importance of their ability to assess the Pluralism climate/environment of the city [1 - most important, 4 - least important].

Experts considered attitudes to religious/political values as the most important indicator of pluralism, followed by attitudes to disability/ethnicity/race, attitudes to immigrants/migrants and attitudes to coalition building. Figure

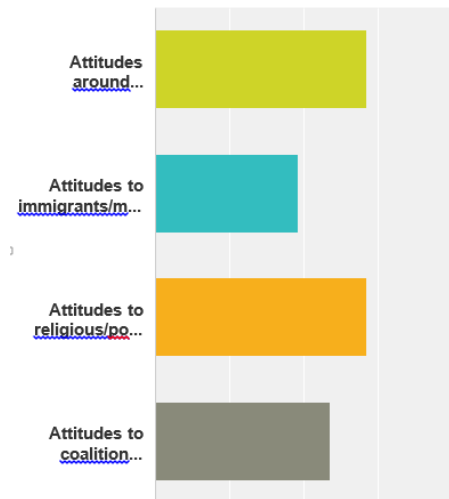


FIGURE 3: WEIGHTED RANKINGS OF INDICATORS³

³ Weighted rankings take into account the number of vote assigned to the indicator and its relative importance (most important 5 points, least important 1 point) as judged by panelists.

TABLE 13: IMPORTANCE RANKINGS ASSIGNED TO THE INDICATORS BY DELPHI PANELISTS

	1	2	3	4
Attitudes around disability/ethnicity/race	27.27% 9	36.36% 12	30.30% 10	6.06% 2
Attitudes to immigrants/migrants	6.06% 2	18.18% 6	39.39% 13	36.36% 12
Attitudes to religious/political values	36.36% 12	27.27% 9	21.21% 7	15.15% 5
Attitudes to coalition building.	30.30% 10	18.18% 6	9.09% 3	42.42% 14

3.3 Assessment of the Pluralism Construct

Q16. Please provide suggestions for improving assessment of the Pluralism construct. For example: a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s); b) Identify and explain any inadequacies or redundancies in the indicators proposed for this construct; c) Any other comments you may wish to provide.

Some experts expressed satisfaction with the proposed set of indicators:

- *These have been comprehensively dealt with.*
- *I cannot think of anything to add*
- *I have nothing to add.*
- *I cannot add any other indicator*

Various experts proposed additional indicators that could be included, such as:

- *Attitude and treatment of internally displace communities Attitude to low and high income social groups attitude to gifted fast and slow learners Attitude to civic and religious values rather than religious/political values, Attitude to minority groups.*
- *Attitudes to the minimum need of existence. Attitudes that enable everyone worldwide to reclaim and/or to have the access to the minimum need of existence*
- *Attitudes toward gender equality*
- *What about Florida's idea of diversity?*
- *Amend as below: Attitudes around disability / ethnicity / race / gender / sexual-preferences Attitudes to religious and non-believers / political values*

Other experts expressed concerns and reservations about the indicators or provided additional perspectives that could enrich the search for additional macro-level indicators:

- *Why is disability grouped together with ethnicity and race? This is faulty taxonomy. 2. I think we also need to have clearer definition of "city" vs. village and town (which in Africa serve as the "growth points" for urbanization and cities).*
- *Assemblages, attractors, and modulators... The list is endless. Too much missing.*
- *I am not sure that measuring attitudes is sufficient. Wouldn't it also be important to see what behaviours and social structures are actually in place?*
- *Attitudes around disability/ethnicity/race seems to encompass the attitudes to immigrants / migrants, so have placed that last. Coalition building insinuates an inclusion approach to all, so have placed it first. Now, we address the concept of*

"attitudes"; while they have a great deal to do with affecting action, they do not drive action, that is, attitudes are based on beliefs and feelings and do not necessarily bring about ownership and self-empowerment. Further, these are internally driven assessors; are there perhaps some externally driven assessors such as the freedom to assemble? Or, perhaps, participation of citizens in city-sponsored events?

Comments by researcher: A number of indicators proposed for assessing pluralism are covered under other constructs in the model and this again points to the underlying complementarities and synergies across constructs (De Beco, 2008; Sharma, 2008, 2009; OHCHR, 2012), for example:

- *One might consider adding the indicator Attitudes to the unfamiliar" or even "attitudes to uncertainty" - both are very relevant to modern urban life. They refer to the importance of "Open mind," "openness to new ideas" and "openness to the unfamiliar".*

With regards to the concerns raised about the taxonomy or categories used for grouping indicators, these are based on a) Attitudes to physical characteristics or group markers; b) Attitudes to locale/origin; c) Attitudes to values/lifestyle choices; and d) Attitudes to power-sharing.

In the second round the Delphi panel will be polled on the incorporation of the following additional proposed constructs into the model:

- Attitudes around economic status,
- Attitudes to gender equality,
- Attitudes to sexual preferences/orientations.

3.4 Assessment of the Inclusion Construct

Q17. *Taken together as a group, in your view, how adequately do these four proposed indicators serve as proxies for assessing the level of Inclusion in the city?*

TABLE 14: HOW ADEQUATELY DO THE PROPOSED INDICATORS ASSESS THE INCLUSION CLIMATE/ENVIRONMENT OF A CITY?

	Very Poor	Poor	Fair	Good	Very Good
%	0	3.1	21.9	59.4	15.6

Table 9 presents the opinions of experts regarding the proposed set of indicators. 75.0% of the experts expressed satisfaction with indicators proposed based on the academic literature.

Q18. *Please arrange the proposed indicators in terms of your perceived importance of their ability to assess the level of Inclusion within the city [1 - most important, 4 - least important].*

TABLE 15: IMPORTANCE RANKINGS ASSIGNED TO THE INDICATORS BY DELPHI PANELISTS

	1	2	3	4
Access to safe and decent work opportunities	25.00% 8	43.75% 14	18.75% 6	12.50% 4
Level of support for women's participation in economic activities	0.00% 0	15.63% 5	43.75% 14	40.63% 13
Access to basic social services	50.00% 16	21.88% 7	12.50% 4	15.63% 5
Access to civic and political space	25.00% 8	18.75% 6	25.00% 8	31.25% 10

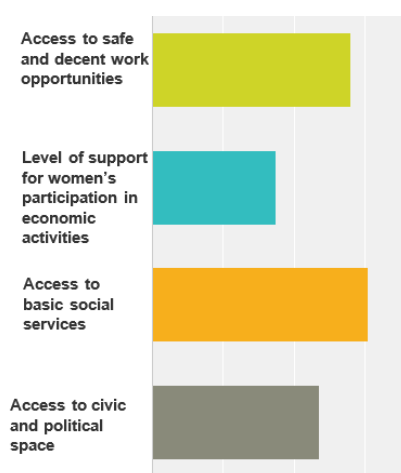


FIGURE 4: WEIGHTED RANKINGS OF INDICATORS⁴

Access to basic social services was viewed as the most important indicator of social inclusion, followed by access safe and decent work opportunities. Women's participation in economic activities was ranked third (but last on a weighted basis) followed by access to civic and political space.

Q19. Please provide suggestions for improving assessment of the Inclusion construct. For example: a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s); b) Identify and explain any inadequacies or redundancies in the indicators proposed for this construct; c) Any other comments you may wish to provide.

A number experts expressed satisfaction with the proposed set of indicators:

- These are the most important indicators.
- I think these work well. The challenge will be to find objective ways of measuring them.
- They seem right to me.
- These are adequately covered.

⁴ Weighted rankings take into account the number of vote assigned to the indicator and its relative importance (most important 5 points, least important 1 point) as judged by panelists.

Various experts proposed additional indicators that could be included or proposed additional perspectives for conceptualizing Inclusion, such as:

- *Social inclusion should be viewed as a life cycle than just as something that affects only the median age. How about the aged? The differently-abled? The children? I know to some extent these can be answered by the four indicators proposed but at a certain point there might be a need to break the indicators down further, recognizing that experiences of people are differentiated depending on their state of life and context as well.*
- *There are lot of differences between users. Poverty: the use of ICT tools is not different from richer people - but the solutions gained from it is very different (size of network, possibility of gaining virtues).*
- *There is need for access to resources, e.g., land, capital, etc. under poverty related aspects. In addition to women, there is need to address participation of out of school youths in economic activities.*
- *Level of support for handicapped person's participation in economic activities.*
- *Income disparity and access to credit for starting businesses*

Other experts highlighted what they viewed as limitations in the proposed indicators:

- *I find "decent work opportunities" a too weak formulation as it can cover a broad range of opportunities depending on who you ask.*
- *Nothing here on identity, no recognition of different cultural attitudes to same or other factors. Over reductionist, limited.*

Comments by researcher: Here too the responses from various researchers point to the interlinkages with other constructs. While a specific aspect such as culture is not explicitly addressed under this indicator set, indicators under other constructs such as pluralism, cultural and linguistic diversity seek to capture these aspects. While it is of course possible to extend or improve any model, the key is to have a set of sufficiently robust indicators that address the key issues of concern.

“Decent work⁵” is an internationally recognized term which sums up the aspirations of people in their working lives. The International Labor Organization (ILO), the UN body with a mandate in this area defines this as “opportunities for work that is productive and delivers a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives and equality of opportunity and treatment for all women and men”.

Although the APMO method indicates that consensus has been achieved there is merit in considering the proposals for additional proposed constructs into the model: Panelists will be requested to propose a fifth indicator from the following set:

- *Level of support for handicapped person's participation in economic activities,*
- *Level of support for participation of youth in economic activities,*

⁵ International Labour Office (2012). *Decent work indicators: Concepts and definitions*, Retrieved from http://www.ilo.org/wcmsp5/groups/public/---dgreports/---integration/documents/publication/wcms_229374.pdf

- *Level of support (access to credit/training) for entrepreneurial activity.*

3.5 Assessment of the Equity Construct

Q20. *Taken together as a group, in your view, how adequately do these four proposed indicators serve as proxies for assessing the level of Equity in the city?*

TABLE 16: HOW ADEQUATELY DO THE PROPOSED INDICATORS ASSESS THE EQUITY CLIMATE/ENVIRONMENT OF A CITY?

	Very Poor	Poor	Fair	Good	Very Good
%	3.1	3.1	18.8	43.8	31.3

Table 12 presents the opinions of experts regarding the proposed set of indicators. 75.1% of the experts expressed satisfaction with indicators proposed based on the academic literature.

Q21. *Please arrange the proposed indicators in terms of your perceived importance of their ability to assess the level of Equity within the city [1 - most important, 4 - least important].*

The indicators were ranked in decreasing priority with Access to basic social services being judged most important followed by Evenness in the distribution of social costs and benefits then by gender mainstreaming in policy (but on a weighted basis ranked fourth) and adequacy of communication, and fair access to social services and goods.

TABLE 17: IMPORTANCE RANKINGS ASSIGNED TO THE INDICATORS BY DELPHI PANELISTS

	1	2	3	4
Access to basic social services	62.50% 20	21.88% 7	6.25% 2	9.38% 3
Evenness in the distribution of social costs and benefits	21.88% 7	31.25% 10	28.13% 9	18.75% 6
Gender mainstreaming in policy	3.13% 1	25.00% 8	28.13% 9	43.75% 14
Adequate communication and fair access to social services and goods	12.50% 4	21.88% 7	37.50% 12	28.13% 9

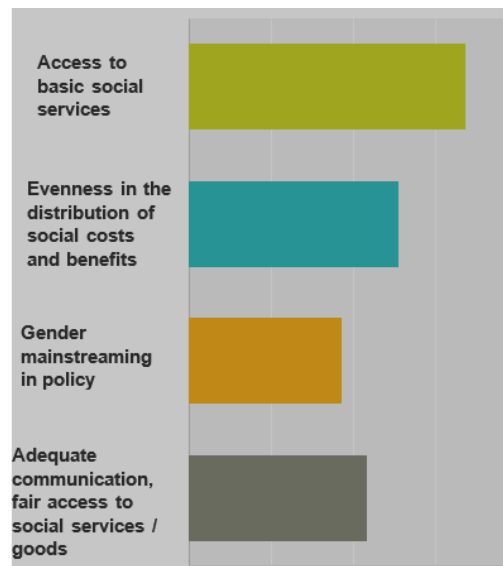


FIGURE 5: WEIGHTED RANKINGS OF INDICATORS⁶

Q22. Please provide suggestions for improving assessment of the Equity construct. For example:
a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s); b) Identify and explain any inadequacies or redundancies in the indicators proposed for this construct; c) Any other comments you may wish to provide.

A number of experts expressed satisfaction with the proposed set of indicators:

- *Again, these indicators seem good.*
- *No further comments*
- *These are adequately covered*
- *These constructs do not need any additional constructs*
- *I agree with these factors*

Some experts proposed additional indicators and areas for improvement such as:

- *Access to land ownership could be added*
- *Reproductive rights, including abortion and planned parenthood*
- *Access to entrepreneurial opportunities*
- *In the k-society the most important equity dimension regards knowledge-based value creation. Educating and empowering individuals and communities is of paramount importance*
- *Access to the right knowledge: data, information, infrastructures that supports proposed indicators*

Other experts highlighted what they viewed as limitations in the proposed indicators:

⁶ Weighted rankings take into account the number of votes assigned to the indicator and its relative importance (most important 5 points, least important 1 point) as judged by panelists.

- While "Evenness" sounds good, this does not work in reality. There are needs of some that are greater than the needs of others; an evenness in "distribution of social costs and benefits" does not insinuate an "even" quality of life, but rather an "even" improvement that retains the same separation as before an intervention.
- Sorry but you can't take a reductionist/drive approach to what is a complex system
- The issue I have with this framework is that it appears to assume a benign political/social environment, where power is fluid and available for all. If this model allows for environments to be restrictive or unwilling to allow political equity I do not see how other equities can reasonably exist. From Hong Kong to Israel/Palestine, to Myanmar - in other words, across the world power to effect equity is not easily relinquished and made broadly available. Measure for assessing that kind of openness are at least an equal component of an effective model, along with the building of a culture that supports that.

Comments by researcher: Here again the comments point to interdependencies with other constructs. Some of the proposals for indicators overlap with aspects foreseen under other constructs. The APMO assessment and panelists' views (See Q23) indicates a very high level of support for the indicator set proposed by the researcher. The second round of the Delphi will focus on identifying a fifth indicator to be selected from the following proposals:

- Access to land ownership
- Access to reproductive services rights, including abortion and planned parenthood
- Access to entrepreneurial opportunities

3.6 Assessment of the Openness Construct

Q23. Taken together as a group, in your view, how adequately do these three indicators serve as proxies for assessing the level of Openness in the city?

TABLE 18: HOW ADEQUATELY DO THE PROPOSED INDICATORS ASSESS THE OPENNESS CLIMATE/ENVIRONMENT OF A CITY?

	Very Poor	Poor	Fair	Good	Very Good
%	0	6.25	12.5	53.1	28.1

Table 14 presents the opinions of experts regarding the proposed set of indicators. 81.2% of the experts expressed satisfaction with indicators proposed based on the academic literature.

Q24. Please arrange the proposed indicators in terms of your perceived importance of their ability to assess the level of Openness in the city [1 - most important, 3 - least important].

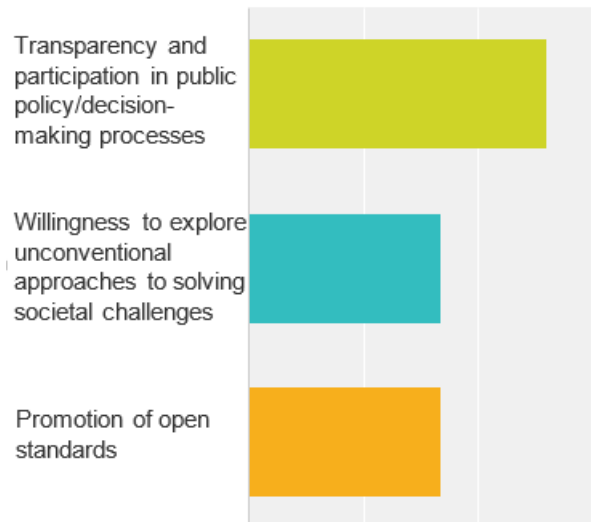


FIGURE 6: WEIGHTED RANKINGS OF INDICATORS⁷

TABLE 19: TABLE 5: IMPORTANCE RANKINGS ASSIGNED TO THE INDICATORS BY DELPHI PANELISTS

	1	2	3
Transparency and participation in public policy/decision-making processes	68.75% 22	25.00% 8	6.25% 2
Willingness to explore unconventional approaches to solving societal challenges	12.50% 4	43.75% 14	43.75% 14
Promotion of open standards	18.75% 6	31.25% 10	50.00% 16

Q25. Please provide suggestions for improving assessment of the Openness construct. For example: a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s); b) Identify and explain any inadequacies or redundancies in the indicators proposed for this construct; c) Any other comments you may wish to provide.

A number of experts expressed satisfaction with the proposed set of indicators:

- *Seems good.*
- *No additional comments*
- *I have nothing to add.*
- *No further comments*

Some experts proposed additional indicators and areas for improvement such as:

- *Separate transparency from participation in decision making to have 4 indicators as transparency applies to all others*

⁷ Weighted rankings take into account the number of vote assigned to the indicator and its relative importance (most important 5 points, least important 1 point) as judged by panelists.

- *International Relations are missing. Openness means also relation to other cities/nations.*
- *Support of civil information society, as a poise and control - developing and supporting e-democracy*
- *Developing collaborative approaches and interactions between University, decision makers, corporations and urban societies.*
- *Re (1) I wonder if we shouldn't add "collaboration". Transparency does move beyond sharing documents on web sites to openly sharing ideas, feelings, personal view points, and different levels of knowledge; participation brings the people into the workings of the city in some way, that is, extending to political engagement and community service; and collaboration means "to work together, especially in a joint intellectual effort" which can create a network that moves from autonomy to interdependence, from deference to dialogue, from a singular focus to a focus on contribution to collective purposes (Heckscher, 2007). Note the precedence for using the three terms demonstrated in the Open Government directive issued in December 2009 by the U.S. government which sets forth three principles for government: transparency, participation, and collaboration, which drove the US Attorney General to issue new guidelines under the Freedom of Information Act reinforcing the principle that openness is the federal Government's default position. Re (2) Willingness is not enough. This requires the confidence and knowledge to act. (c) This is huge and very important; AND in service to the other two elements.*

Other experts highlighted what they viewed as limitations in the proposed indicators:

- *Although I don't have specific examples, the indicators here seem limited for the area. The problem may be that the indicator on transparency and participation is too broad, encompassing multiple possible indicators. I would suggest breaking this indicator down into more precise indicators.*
- *Too much transparency is a bad thing it damages innovation. This question has too many assumptions.*
- *The scale of item 24 is not valid and cannot be applied as there are only three options.*
- *Again, i go back to the notion of duty bearers and claim holders. An open society is not only dependent on government but also on the other sectors within it. It just seem to me that the indicators are more reflective of governments than of the society where the government operates. For example, issues like fundamentalism in other sectors destroys openness. This is not captured by this indicator.*
- *Paradoxically, this should include transparency as well as anonymity (privacy) as the circumstances call for.*

Comments by researcher: The proposal regarding the use of the term collaboration is an excellent one. It does appear though to capture a number of aspects already addressed under the pluralism construct. Similarly aspects such as international relations are covered under the Education for all with regards to aspects such as building conditions for international cooperation and understanding through global citizenship education. Here again the comments point to interdependencies and areas of mutual reinforcement. With regards to the comments on fundamentalism, here too there appears to be overlap with aspects under the pluralism concept. Some of the proposals for indicators overlap with aspects foreseen under other constructs. The APMO assessment and panelists' views (See Q23) indicates a very high level of support for the indicator set proposed by the researcher. The second round of the Delphi will focus on identifying a possible fourth and fifth indicator to be selected from the following proposals:

- *Transparency in public policy/decision-making processes*

- *Participation in public policy/decision-making processes*
- Protection of personal privacy and personal data

3.6 Assessment of the Freedom of Expression Construct

Q26. *Taken together as a group, in your view, how adequately do these four indicators serve as proxies for assessing Freedom of Expression in the city?*

TABLE 20: HOW ADEQUATELY DO THE PROPOSED INDICATORS ASSESS THE FREEDOM OF EXPRESSION CLIMATE/ENVIRONMENT OF A CITY?

	Very Poor	Poor	Fair	Good	Very Good
%	0	6.3	6.3	43.8	43.8

Table 16 presents the opinions of experts regarding the proposed set of indicators. 87.5% of the experts expressed satisfaction with indicators proposed based on the academic literature.

Q27. *Please arrange the proposed indicators in terms of your perceived importance to their ability to assess the climate/environment for Freedom of Expression in the city [1 - most important, 4 - least important].*

TABLE 21: IMPORTANCE RANKINGS ASSIGNED TO THE INDICATORS BY DELPHI PANELISTS

	1	2	3	4
Social climate for free discussion and exchange	71.88% 23	18.75% 6	0.00% 0	9.38% 3
Diversity, sustainability and independence of media channels	3.13% 1	46.88% 15	34.38% 11	15.63% 5
Professional standards amongst media practitioners	3.13% 1	12.50% 4	46.88% 15	37.50% 12
Independence, effectiveness and transparency of public broadcasting services	21.88% 7	21.88% 7	18.75% 6	37.50% 12

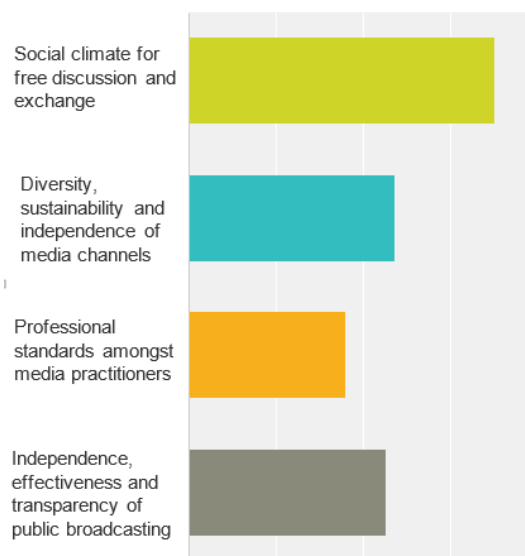


FIGURE 7: WEIGHTED RANKINGS OF INDICATORS⁸

Panelists viewed a social climate conducive to free expression as the most important factor. This was followed by a diversity of independent and sustainable media, professional media standards and finally independence, effectiveness and transparency in public broadcasting.

Q28. Please provide suggestions for improving assessment of the Freedom of Expression construct. For example: a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s); b) Identify and explain any inadequacies or redundancies in the indicators proposed for this construct; c) Any other comments you may wish to provide.

A number of experts expressed satisfaction with the proposed set of indicators:

- *These are indicators I would have chosen myself. I do not see any inadequacies or redundancies*
- *Very, very important!!*
- *The above indicators seem adequate.*
- *I believe the indicators adequately cover the measure of Freedom of expression, the most important being the social and political climate for free discussion.*

Some experts proposed additional indicators and areas for improvement such as:

- *I was just thinking of negative indicators like the number of journalists that are killed, or the number of laws passed that favor censorship, the number of cases in court regarding violation to privacy among others. Just wondering how this can be captured in the indicators.*
- *"Access" does not just mean availability of information; rather, also, the ability of the individual to understand and act on that information. Thus a social climate for free discussion and exchange is paramount for that understanding (the realm of social*

⁸ Weighted rankings take into account the number of votes assigned to the indicator and its relative importance (most important 5 points, least important 1 point) as judged by panelists.

knowledge). Yet, in today's environment, there rises the importance of "information literacy" for developing countries, which is necessary to ferret out what is true and untrue, what is old and new, what is meaningful and what is superfluous, etc. Strongly suggest the addition of information literacy as an indicator. Definition: Information Literacy is a set of information and knowledge age skills that enable individuals to recognize when information is and is not needed, and how to locate, evaluate, integrate, use and effectively communicate information. (US Gov DON Information Literacy Toolkit). (NOTE: Information Literacy was mandated for all US government employees in a 1989 Presidential Committee on Information Literacy.)

- *This seems good. However, I think something on government policies in this space would be worth adding.*

Other experts highlighted what they viewed as limitations in the proposed indicators:

- *What I miss here are channels for individual expression and free discussion - public forums, social media, town meetings etc. - this does not happen through traditional media and/or broadcasting channels*
- *This assessment is based on a bias towards 'media' and yet freedom of expression can be seen in social interaction in the community. How free for example are young people and women to express themselves in society? This is an important issue in Africa where hierarchies exist by age, gender, and other social classification. So a focus on 'media' is a limited view when looking at freedom of expression*
- *Again, these policies do not exist in a political or cultural vacuum. Allowance for political power and willingness to change are essential elements for freedom of expression to exist. This awareness needs to be incorporated and articulated as is necessary.*
- *But remember, the freedom to swing my arm ends where someone else's nose begins ... media must also be accountably responsible.*

Comments by researcher: The quantitative measures showed a high level of support for the proposed indicators. This was further amplified in the comments of panelists whose proposals for new indicators emphasized aspects covered by the proposed indicators. For example – the availability of channels for individual expression and free discussion such as public forums, social media, town meetings, public gatherings and demonstrations are influential elements that shape the social climate for free expression. This social climate is also shaped by events such as the killing of journalist and censorship practices. In a similar way, ongoing professional development of media practitioners, ethics all relate to professional standards. Information literacy and in fact UNESCO's hybrid concept of media and information literacy is very relevant, but this aspect has been captured within the indicator set proposed under education for all as a competence required by citizens in a society shaped by information and knowledge flows. Similarly the proposal for Access to Internet and web development capabilities can also be more comprehensively captured through indicators under the education for all and Universal Access to information and knowledge.

Some aspects such as the regulation of powerful media, media accountability/responsibility and protection of personal data/privacy, freedom to swing my arm ends where someone else's nose begins are not captured in the four proposed indicators and so notwithstanding the high level of consensus there is merit in a fifth indicator that addresses this aspect. The second round of the

Delphi will focus on the incorporation of a possible fifth indicator that seeks to get a sense of the presence, scope and effectiveness of national regulation in this area:

- Media (on/off-line) regulatory frameworks

3.7 Assessment of the Universal Access to Information and Knowledge Construct

Q29. Taken together as a group, in your view, how adequately do the four proposed indicators serve as proxies for assessing Universal Access to Information in the city?

TABLE 22: HOW ADEQUATELY DO THE PROPOSED INDICATORS ASSESS THE UNIVERSAL ACCESS TO INFORMATION CLIMATE/ENVIRONMENT OF A CITY?

	Very Poor	Poor	Fair	Good	Very Good
%	0	12.5	31.3	43.8	12.5

Table 18 presents the opinions of experts regarding the proposed set of indicators. 56.3% of the experts expressed satisfaction with indicators proposed based on the academic literature.

Q30. Please arrange the proposed indicators in terms of your perceived importance to their ability to assess Universal Access to Information in the city [1 - most important, 4 - least important].

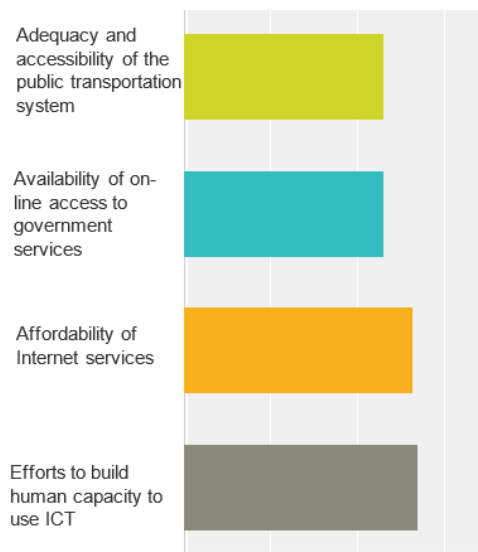


FIGURE 8: WEIGHTED RANKINGS OF INDICATORS⁹

⁹ Weighted rankings take into account the number of vote assigned to the indicator and its relative importance (most important 5 points, least important 1 point) as judged by panelists.

TABLE 23: IMPORTANCE RANKINGS ASSIGNED TO THE INDICATORS BY DELPHI PANELISTS

	1	2	3	4
Adequacy and accessibility of the public transportation system	25.00% 8	15.63% 5	25.00% 8	34.38% 11
Availability of on-line access to government services	21.88% 7	12.50% 4	40.63% 13	25.00% 8
Affordability of Internet services	21.88% 7	40.63% 13	18.75% 6	18.75% 6
Efforts to build human capacity to use ICT	31.25% 10	31.25% 10	15.63% 5	21.88% 7

Q31. Please provide suggestions for improving assessment of the Universal Access to Information construct. For example: a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s); b) Identify and explain any inadequacies or redundancies in the indicators proposed for this construct; c) Any other comments you may wish to provide.

A number experts expressed satisfaction with the proposed set of indicators:

- *Seems satisfactory to me*
- *Indicators to cover Universal Access covered. Human capacity building to use ICT especially important in developing countries.*
- *Again, these all work as a set. For example, if you can't afford it, it doesn't matter how good you are at using it; if you can't use it, it doesn't matter whether you can afford it or not. In like manner, on-line access to government service is of little import if individuals don't have access to the Internet and/or don't know how to use it! I've left public transportation system first only because some developing countries are just beginning to open to virtual connectivity; however, over time the virtual connectivity becomes more important than physical transportation! Also, see earlier reference to "Access" and "information literacy".*
- *See my other comments These are all critical and play off of one another*

Some experts proposed additional indicators and areas for improvement such as:

- *I miss availability of media channels for free exchange of ideas and knowledge. This is very different in most cultures from 'access to government services'. Access to information and knowledge needs capacity for using ICT - and it also needs ability to weigh and understand what is available on ICT channels (this point has been made earlier). What is needed here is a criteria relating to EDUCATION and the ability to process information.*
- *I recommend an indicator for traditional media e.g. print media and another indicator for adequacy and affordable electricity or solar power*
- *Due to hierarchies referred to above, 'universal access' can be limited in some African societies leading to inter-generational information and knowledge gaps.*

- *WSIS was (sadly) a vision that remains unfulfilled. Don't lose sight of availability and usability in addition to affordability. With e-services, transport is less significant than health, education and culture.*
- *An ability to limit morally disruptive behavior that makes individuals into objects, i.e., pornography and other sexually or religiously demeaning norms that are not generally accepted by the city dwellers.*
- *Suggested revision - affordability, accessibility and safety of internet services*
- *There are two more big topics: - public access point - mentor network*
- *Efforts to build clusters and knowledge networks among enterprises and entrepreneurs, inside and outside of the region.*
- *-ICT policy on infrastructure, content and language -ICT literacy rate -use of ICT for knowledge creation, safeguarding, learning, communication and networking*
- *-ICT competency framework for human capacity building*

Other experts highlighted what they viewed as limitations or irrelevance of proposed indicators:

- *I am not sure why public transportation system is singled out. This is very sectoral. So I wonder too why not agricultural information system, market prices, etc. Also, in a context of low internet penetration, why do we treat universal access to knowledge and information as a construct, limited only to the internet? How about offline means?*
- *Transportation not relevant to IT. Would add traditional public libraries with IT facilities for LDCs*
- *Again question includes assumption that digitization is the only form of knowledge and that access has to be in that form. Traditional knowledge systems have more utility and are not covered here.*
- *This seems to me to be missing important indicators about other forms of access to information and knowledge than using the Internet. The poor are often increasingly excluded from government services when they move online because the traditional services decline in quality but online access is challenging for many marginalized communities. Thus, the indicators here are all important but inadequate as a group.*

Comments by researcher: Transportation provides an effective means of bringing people together and facilitating conversation, knowledge exchange and access to a range of good and services. With only some 42% of the world's population on-line, the ability for face to face interaction, the access to/transmission of information-laden goods and services - for example newspapers, getting to a hospital, school or workplace - is perhaps just as if not more important an influence than other communication infrastructure in ensuring knowledge-based development. In large and mega-cities (Bangkok, Lagos, Sao Paulo...) of both developed and developing countries, despite the importance of online access and the preponderance of ideas such as the “world is flat” location, access to local or regional clusters shows that transportation still plays a critical role in access to a variety of goods, services, tacit knowledge flows and economic development.

As explained in the background paper, the UNESCO's Knowledge Societies concept emphasizes context, relevance and application of knowledge. This research does not dispute the tremendous value of this important body of knowledge and related transmission mechanisms (e.g. intergenerational knowledge transfer). A considerable body of research by bodies such as FAO,

UNESCO, WHO, WIPO and the World Bank amongst others point to the value of traditional knowledge systems in agriculture, medicine, eco-system management amongst others as well as a stimulus for innovations across numerous sectors.

As mentioned under other sections, there is considerable interaction between constructs and in many cases the indicator sets work as groups. There is also cross-group interactions of constructs. For examples some aspects of on-line/offline media require simultaneous treatment from perspectives related to education, freedom of expression, inclusion, universal access to information as well as human rights in order to obtain a holistic perspective. This can be seen in relation to aspects such as “morally disruptive behavior”, “online access is challenging for many marginalized communities”, Access to information and knowledge needs capacity for using ICT - and it also needs ability to weigh and understand what is available on ICT channels”. These are all important aspects! In my view it is both difficult (perhaps unrealistic) and counter-productive to develop an exhaustive set of off-the-shelf indicators that is relevant to every context. Again the model should serve – as it appears to be doing from the comments received - to trigger amongst stakeholders in cities reflection and critiques on what is? What should be? And How to get there?

Given the relatively low level of consensus in the first round, the second round of the Delphi will focus on selecting five indicators from an expanded set of possible indicators that considers the initial proposals as well as the following proposed by panelists:

- *adequacy and accessibility of the public transportation system*
- *availability of on-line access to government services*
- ~~*affordability of Internet services*~~
- *efforts to build human capacity to use ICT*
- *affordability, accessibility and safety of internet services*
- *access to reliable and affordable power supply*
- *support for traditional/local knowledge (preservation, valorization and use)*
- *presence of knowledge clusters (local/regional) and communities of practice*

3.8 Assessment of the Cultural and Linguistic Diversity Construct

Q32. *Taken together as a group, in your view, how adequately do these three proposed indicators serve as proxies for assessing the Cultural & Linguistic Diversity of the city?*

TABLE 24: HOW ADEQUATELY DO THE PROPOSED INDICATORS ASSESS THE CULTURAL AND LINGUISTIC DIVERSITY CLIMATE/ENVIRONMENT OF A CITY?

	Very Poor	Poor	Fair	Good	Very Good
%	0.0	3.1	25.0	50.0	21.9

Table 20 presents the opinions of experts regarding the proposed set of indicators. 71.9% of the experts expressed satisfaction with indicators proposed based on the academic literature.

Q33. *Please arrange the proposed indicators in terms of your perceived importance to their ability to assess the Cultural & Linguistic Diversity of the city [1 - most important, 3 - least important].*

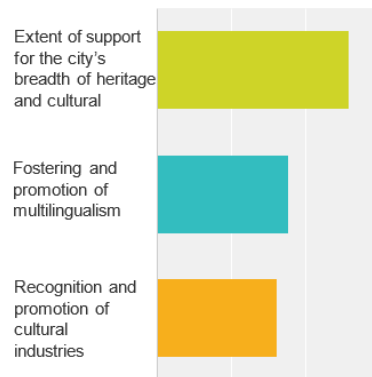


FIGURE 9: WEIGHTED RANKINGS OF INDICATORS¹⁰

TABLE 25: IMPORTANCE RANKINGS ASSIGNED TO THE INDICATORS BY DELPHI PANELISTS

	1	2	3
Extent of support for the city's breadth of heritage and cultural expressions	71.88% 23	15.63% 5	12.50% 4
Fostering and promotion of multilingualism	15.63% 5	46.88% 15	37.50% 12
Recognition and promotion of cultural industries	12.50% 4	37.50% 12	50.00% 16

Q34. Please provide suggestions for improving assessment of the Cultural & Linguistic Diversity construct. For example :a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s); b) Identify and explain any inadequacies or redundancies in the indicators proposed for this construct; c) Any other comments you may wish to provide.

A number experts expressed satisfaction with the proposed set of indicators:

- Well indicated
- Culture really matters!
- Nothing to add here.
- The indicators adequately cover cultural and linguistic diversity

Some experts proposed additional indicators and areas for improvement such as:

- This also has educational dimension. Ability to access culture depends to a great extent on one's ability to understand the importance this (can/should) play in daily life.
- A new indicator would be: Immigration policy (where/when appropriate)

¹⁰ Weighted rankings take into account the number of vote assigned to the indicator and its relative importance (most important 5 points, least important 1 point) as judged by panelists.

- *Valuing of cultural ceremonies*
- *Cultural heritage preservation efforts*
- *Capacity building for cultural expression*
- *Extent of digitalization of tangible and intangible cultural heritage*
- *Fostering and promotion of traditional languages. Traditional languages are great source of knowledge transfer.*
- *These are very much related to tolerance, religion and the influx of immigration being on most western and African nations - one could try to develop indicators around these three parameters in order to strengthen this constructs.*

Other experts highlighted what they viewed as limitations of the proposed indicators:

- *I just think the indicators are too limited, while at the same time, I do not know what to suggest. Education policies? Textbook content? Will this be covered by fostering and promotion of multilingualism? The adoption of a national language, is this a good thing or a bad thing? The choice of medium of instruction, is this something that has to be decreed? And if so, is this a recognition of multilingualism?*
- *I wonder how to measure the extent of support for the city's breath of heritage and cultural expressions? Would like to see those metrics.*
- *Can go further into identity nurturing and development. Going beyond received economic (e.g. consumerism) and political (e.g. centralization) culture should be supported through affirmative action*
- *The phenomena of culture needs to be more broadly explored. Culture is a manifestation of values. The Model needs to have a mechanism to define what values are in play that make up the culture of the community and what can be done to enhance them to support equity and participation.*
- *... the creative and cultural industries are too complex to summarize.*

Comments by researcher: The quantitative measures proposed gained a high level of support with near-consensus being achieved for the proposed indicators. Again cross-construct interdependencies were observed in proposed indicators with aspects covered under constructs such as pluralism, education for all, freedom of expression and inclusion amongst others. As noted earlier, duplicate indicators will be avoided.

Based on the inputs received, “Support for city’s breadth of heritage and cultural expressions”, will be replaced by two proposed indicators: level of cultural heritage preservation efforts; level of capacity building in cultural expression sector.

Specific attention to traditional and national languages is accounted for under the proposed indicator “Fostering and promotion of multilingualism”.

Taking into account the important role played by “current use” in the maintenance, transmission and renewal of culture (UNESCO, 2003, 2005) as well as comments raised by panelists such as “Extent of digitalization of tangible and intangible cultural heritage” and “Fostering and promotion of traditional languages”, a new indicator “Presence of local culture and languages in digital media” is proposed

The second round of the Delphi will focus on building further consensus around the following five indicators:

- *level of cultural heritage preservation efforts*
- *level of capacity building in cultural expression sector*
- *fostering and promotion of multilingualism*
- *recognition and promotion of cultural industries*
- *presence of local culture and languages in digital media*

3.9 Assessment of the Education for All Construct

Q35. Taken together as a group, in your view, how adequately do these four proposed indicators serve as proxies for assessing the Education for All construct within the city?

TABLE 26: HOW ADEQUATELY DO THE PROPOSED INDICATORS ASSESS THE EDUCATION FOR ALL CLIMATE/ENVIRONMENT OF A CITY?

	Very Poor	Poor	Fair	Good	Very Good
%	0.0	6.3	18.8	40.6	34.4

Table 12 presents the opinions of experts regarding the proposed set of indicators. 75.0% of the experts expressed satisfaction with indicators proposed based on the academic literature.

Q36. Please arrange the proposed indicators in terms of your perceived importance to their ability to assess the Education for All Construct of the city [1 - most important, 4 least important].

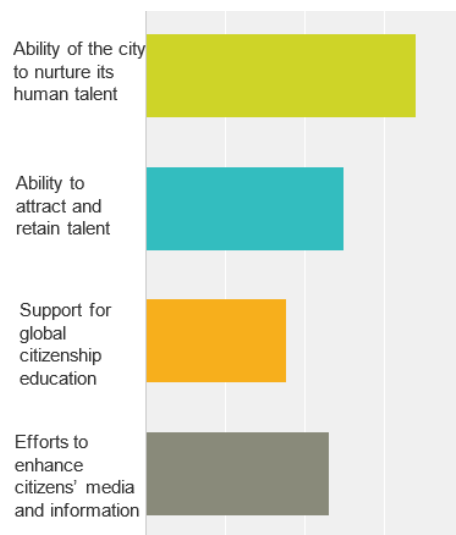


FIGURE 10: WEIGHTED RANKINGS OF INDICATORS¹¹

¹¹ Weighted rankings take into account the number of vote assigned to the indicator and its relative importance (most important 5 points, least important 1 point) as judged by panelists.

TABLE 27: IMPORTANCE RANKINGS ASSIGNED TO THE INDICATORS BY DELPHI PANELISTS

	1	2	3	4
Ability of the city to nurture its human talent	59.38% 19	25.00% 8	12.50% 4	3.13% 1
Ability to attract and retain talent	12.50% 4	43.75% 14	25.00% 8	18.75% 6
Support for global citizenship education	6.25% 2	12.50% 4	34.38% 11	46.88% 15
Efforts to enhance citizens' media and information literacy (digital literacy)	21.88% 7	18.75% 6	28.13% 9	31.25% 10

Q37. Please provide suggestions for improving assessment of the Education for All construct. For example: a) Suggest additional indicator(s) for assessing this construct. If you do, please explain your reasoning and also give definition(s) for the indicator(s); b) Identify and explain any inadequacies or redundancies in the indicators proposed for this construct; c) Any other comments you may wish to provide.

A number experts expressed satisfaction with the proposed set of indicators:

- *I think these are sufficient.*
- *seems good*
- *This one is very good. But perhaps you fit the 'skill development' or 'lifelong learning' in one of the indicators.*
- *Seems satisfactory*
- *These proposed indicators are robust. In addition, and again, a cost model for this would enhance the argument. Basic education is somehow taken for granted, few realize that is a complex and expensive process for a society to have in place basic education and to ensure it is relevant to build the 21st century's knowledge workers.*
- *These are very, very critical to the success of your project I would consider emphasizing them more in your model...*
- *Very comprehensive, this one.*

Some experts proposed additional indicators and areas for improvement such as:

- *Equality in education is missing and it should be added. Another indicator should be added to see if the students are actually learning.*
- *Fostering access to knowledge and information for all in the city -Efforts to promote gender equality in digital literacy -Support sustainable development of infrastructure and internet access for all*
- *These indicators are fine, but seem to place undue emphasis on what a city does. It does not emphasize what it should NOT do, most of which pertains to unnecessary regulations and bureaucracy that get in the way of learning and development. Some emphasis on how a city makes it simple for people to interact with each other, do business, and learn without unnecessary regulation are important here.*

- *Efforts to enhance and to promote traditional education. Education that we receive from the parents*
- *City to innovate new ways to convert education to applied knowledge.*

Other experts highlighted what they viewed as limitations of the proposed indicators:

- *I think the views of EFA here are limiting. There is need for life-long learning and the need for adaptive skills as the city develops and new challenges emerge*
- *The concept of human capital may embody an invalid metaphor as it's not something that can be treated as an asset and monetarized per se*
- *Here education should be differentiated? Higher education, professional education, vocational education and training.... What is global citizen education? Thinking about developments in Syria and Iraq I have difficulties to link local conditions and politics with global education.....*
- *Understanding sustainability is critical*

Comments by researcher: Here too, panelists expressed a high-level of support for the proposed indicator set with near-consensus 75.0%.

Again cross-construct interdependencies were observed in proposed indicators with aspects covered under constructs such as pluralism, universal access to information and knowledge, freedom of expression equity and inclusion amongst others. This could be seen in comments such as: *Equality in education is missing*; and *Fostering access to knowledge and information for all in the city*.

Various indicators proposed are already envisaged within the ambit of the processes, people and outcome perspectives of selected indicators. For example the concept of nurturing talent introduced in the indicator takes a very broad view and seeks to address the gamut of ongoing measures under rubrics such as life-long learning - vocational, pre-primary, primary, secondary and tertiary education and non-formal education including mentoring and peer-to-peer learning that serve to build human capital. Accordingly this indicator incorporates such aspects as “support for adaptive skills in response to city development and emergence of new challenge”.

The comment concerning the adverse impact of regulation and bureaucracy is an important one and very well taken. This is in some way a context-dependent preference, with some societies wanting more regulation than others. Again, discussions around “how to identify and how to achieve goals?” are expected to be part of the discourse the model stimulates.

The concept of nurturing talent introduced in the indicator takes a very broad view and seeks to address the gamut of measures under rubrics such as life-long learning - vocational, pre-primary, primary, secondary and tertiary education and non-formal education including mentoring and peer-to-peer learning that serve to build human capital.

The lens of human capital, like any other lens, has conceptual and implementation limitations. However, there is research that links higher levels of education and thus human capital with enhanced socio-economic performance.

One of the current challenges of the EFA process was that it focused on primary education. The context of education in post-disaster and post-conflict situations such as Syria and Iraq, though appreciated, are for the moment beyond the scope of this model. UNESCO's concept of Global Citizenship Education refers to a set of skills, competences and attitudes that enable persons to more effectively live, work and play in multicultural global settings.

While not specifically addressed within the education indicators, sustainability is one of the societal goals being pursued. The development of human capacities to learn to learn, the nurturing of human talent as well as the ability to retain its own human talent (reducing brain drain) and attracting other expertise are expected to enable societies to more effectively address questions of societal visioning and sustainability. As has been emphasized by earlier panelists the transfer of traditional knowledge has an important role to play, consequently an indicator support for inter-generational transfer of traditional and local knowledge is included.

The second round of the Delphi will focus on building further consensus around an updated set that includes the following new indicator:

- *support for inter-generational transfer of traditional and local knowledge*

Part 4. Panelists' Self-Assessment of their Knowledge of the Study's Constructs

4.1 Panelists' Self-Assessment on Foundations

Q38. *What is your level of knowledge on the inter-disciplinary constructs found under the Societal Values and Structural Frameworks (Foundations in UNESCO's Knowledge Societies Conceptual Framework) component of the Proposed Knowledge-based Development Model?*

TABLE 28: DELPHI PANELIST'S SELF-ASSESSMENT OF THEIR PROFICIENCY ON SOME CONSTRUCTS (FOUNDATIONS) IN THE MODEL

	Very high	High	Adequate	Low	Very low
Human Rights and Needs	9.38% 3	25.00% 8	59.38% 19	3.13% 1	3.13% 1
Pluralism	3.13% 1	37.50% 12	53.13% 17	3.13% 1	3.13% 1
Inclusion	15.63% 5	43.75% 14	37.50% 12	0.00% 0	3.13% 1
Equity	12.50% 4	34.38% 11	46.88% 15	3.13% 1	3.13% 1
Openness	18.75% 6	43.75% 14	34.38% 11	0.00% 0	3.13% 1

For each construct, at most 6.2% of the experts participating assessed their knowledge and proficiency on the model constructs as less than adequate. Self-reported expertise was highest for

the Inclusion and Openness construction with only 3.1% of expertise considering their level of knowledge less than adequate.

4.2 Panelists' Self-Assessment on Principles

Q39. *What is your level of knowledge on the inter-disciplinary constructs found under the Individual Capabilities and Capacities (Key Principles in UNESCO's Knowledge Societies Conceptual Framework) component of the Proposed Knowledge-based Development Model?*

TABLE 29: DELPHI PANELIST'S SELF-ASSESSMENT OF THEIR PROFICIENCY ON SOME CONSTRUCTS (PRINCIPLES) IN THE MODEL

	Very high	High	Adequate	Low	Very low
Freedom of Expression	12.50% 4	34.38% 11	46.88% 15	3.13% 1	3.13% 1
Universal Access to Information and Knowledge	28.13% 9	37.50% 12	28.13% 9	3.13% 1	3.13% 1
Cultural and Linguistic diversity	3.13% 1	34.38% 11	46.88% 15	9.38% 3	6.25% 2
Education for All	18.75% 6	46.88% 15	28.13% 9	3.13% 1	3.13% 1

The lowest level of self-reported expertise was associated with the Cultural and Linguistic Diversity Construct for which 15.6% of participants reported that their level of knowledge was less than adequate. Across the remaining constructs of Freedom of expression, Universal Access to Information and Knowledge and Education for All, 6.2% of experts assessed their knowledge and proficiency on the model constructs as less than adequate.

Results from Round 2 of the Delphi Study

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Acknowledgements

I would like to again express my sincere appreciation to all panelists for their inputs to Round 2. I greatly value the time and effort you have made to this endeavor. For this, I am truly grateful.

I look forward to your continued support in Round 3.

Once again, thank you so very much!

Paul 😊

DELPHI STUDY ROUND 2 REPORT AND FINDINGS

Summary of Findings

In Round 2 the indicator sets and Knowledge-based Development Model continued to be updated. Amongst other things this included addressing concerns that relate to ensuring that the needs of vulnerable groups are addressed and their voices heard; and local and traditional knowledge and culture was valued and strengthened. Panelists confirmed that their inputs are being heard, understood and taken into account in the model building process.

Some panelists questioned whether empirical support exists for the relationships in the knowledge-based development model. At this stage, the Delphi study can only assess whether the model has “face validity”, that is to say, whether the proposed relations appear to be reasonable? Panelists drawing on their diverse disciplinary knowledge and global experiences have been able to refine this model, this suggests that there is indeed an underlying logic. The field-testing phase will seek to gather data to explore whether conditions on the ground support the proposed relationships.

The tension between general and context-specific indicator sets has been a recurring concern. Drawing on this global expert panel, has enabled a set of core indicators/criteria set to be developed. Later, in field pilot surveys these can be adapted to the specific context. As the model relies on semi-structured interviews, the core indicators provide a common point for exploration with stakeholder groups in the specific city. Therefore it is the interviewees - not the model - that provides the necessary context and directs the researcher to what is meaningful and from which relevant and purposeful action can emerge.

Overall, the second round of the Delphi study has been characterized by increased engagement and consensus among panelists. This is reflected both in the qualitative and quantitative analyses. Second round APMO consensus levels ranged from 84.2% to 94.7%, a marked improvement over the first round where these values ranged from 56.3% to 87.9%. Consensus was also achieved for an additional five constructs. The third and likely final round will examine the revised Knowledge-based Development Model and indicator sets for Universal Access, Equity and Education for All.

Overview of the Delphi Study and its Purpose

The study considers knowledge maturity to be a society’s ability to create conditions that stimulate, harness and direct the potential of its members towards creating and leveraging tangible and intangible assets in order to realize the full potential of the society’s members, to address societal challenges and realize a shared societal goal and vision. This study is focused on primate cities of selected developing countries in Asia and Africa. As explained in the background paper, the study hypothesizes that knowledge maturity is influenced by nine constructs - human rights and needs, pluralism, equity, inclusion, openness, freedom of expression, universal access to information, cultural and linguistic diversity and education for all - identified in UNESCO’s Knowledge Societies Conceptual Framework.

This Delphi study therefore seeks to:

- Identify a set of indicators/criteria that enable each construct derived from the UNESCO Knowledge Societies Conceptual Framework that contribute to knowledge maturity to be qualitatively assessed, and
- Validate a proposed knowledge-based development model.

The final knowledge-based development model will assess each construct by evaluating the selected indicators/criteria using a four-level maturity scale that takes into account people, processes as well as outcomes. It is expected that this validated model will provide a policy tool for developing understanding of the city and its actors, context and concerns and allow its knowledge maturity to be assessed. This baseline will enable the identification of follow-up steps for possible enhancement and improvement of its knowledge maturity. When operationalized the model will by necessity consider both quantitative and qualitative aspects. It will collect the views of societal stakeholders so as to develop a rich understanding of the aspirations, values, concerns, and interaction dynamics amongst stakeholder groups as well as other contextual factors.

The indicators/criteria and the model provide a starting point for exploration, discussion and adaptation. They are intended to help policy-makers to identify and advance feasible actions as well as to prioritize efforts to address societal challenges and goal within their specific context. While the model can supporting the exchange of experiences and provide insight into policy options, it is not intended to serve as a ranking system. Each city must adapt the model to its context.

Participation in Round 2 of the Delphi Study

The second round of the Delphi study was scheduled to be conducted between July 17 and August 2, 2015. The study period was extended by three days until 5 August to facilitate the participation of additional panelists. A total of 40 panelists participated in the second round of the study. Although this represented a decline from the first round in which 42 panelists participated, the percentage of panelists completing the survey increased from 76.2% in round 1 to 95.0% in round 2. Three new experts completed the pre-qualification questionnaire were admitted to the panel and undertook the survey. Two of the three new experts completed the survey.

A total of 27 experts have participated in and completed the surveys in rounds 1 and 2. This group of panelists represents 64.3% and 67.5% respectively of participating experts in the first and second round respectively. This group of 27 experts, represents 84.4% and 71.1% respectively of experts completing the survey questions in round 1 and round 2, this sub-group therefore plays an important role in the shaping of group consensus.

There were fewer questions in the second round than in the first round and this resulted in shorter average survey completion times. With consensus achieved in this round for a further 6 constructs, a dramatic fall in the time needed to complete round 3 is anticipated.

Assessing Consensus Amongst Panelists

As in the first round, both qualitative and quantitative approaches were used to assess consensus amongst the panelists.

Qualitative Assessment

The qualitative assessment involved the review and thematic grouping of comments from participants. On this basis, a general sense of the level of satisfaction with the revisions made to the model and indicator sets could be identified. Comments provided also helped to identify approaches and directions for further improvements.

Findings from the qualitative assessment of consensus

With the exception of the final three questions, open-ended questions in the second round were optional. This contrasted to the first round of the Delphi study where responses to open-ended questions were compulsory. On average, each optional questions received 15 responses. Question 7 which related to the adequacy of the proposed knowledge-based development model received 2.5 times the average number of response. The high level of voluntary responses as well as the high completion rate points to the interest and engagement of panelists.

Open-ended responses to the optional questions, served to:

- Confirm that the revisions and modifications proposed by the panelists had been received, understood and integrated by the researcher into the revised knowledge-based development model and indicators;
- Signal what panelists viewed as potential measurement difficulties that could arise in the application of the model and the need to reflect on these aspects, particularly with a view to avoid “gaming” and inappropriate use of measures to manipulate perceptions;
- Provide suggestions for clarifying and enhancing the depiction of the interdependencies and relationships in the model, improving the terminology;
- Highlight and ensure that attention was given to the plight of vulnerable groups, particularly the elderly, poor and migrants, and their specific needs and perspectives;
- Identify additional elements, such as availability of public libraries, cultural, contextual and economic factors, that were not explicitly captured in the indicators;
- Highlight conceptual, epistemological and methodological limitations particularly related to how knowledge and intellectual assets are conceptualized and represented by various academic disciplines and in turn models. For example knowledge management versus information management perspectives, differences in complexity between organizations and cities... These in turn have implication for how the underlying conceptual framework, world-view and power structures from which the proposed knowledge-based development model and indicators is perceived with regards to its validity;
- Emphasize the importance of empirical validation (field-testing) of the proposed knowledge-based development model and indicators;
- Question the applicability and specificity of the model to the city context and to highlight the differences in municipal and national jurisdiction/responsibility; and
- Propose concrete suggestions for overcoming various identified limitations.

Only the specific constructs for which comments resulted in further changes to the indicators are included here. Other comments are covered in the Appendix:

Knowledge-based Development Model

- *Emphasize the linkage between individual and societal components of knowledge maturity*
- *The interaction between knowledge maturity and conception of national development strategic goals (being addressed by actions in the city) and the resulting learning/feedback is not captured.*
- *Revise terminology of knowledge processes to reflect the current thinking/state of the art*

Researcher's comments: These will be incorporated and presented in an updated model in Round 3.

Inclusion

- *b) Level of support for the participation of vulnerable groups (women, youth, persons with disabilities) in economic activities Would retired or aged individuals also need to be included in "vulnerable groups"?*
- *Please ensure you include the elderly in poverty-related aspects (b) above.*

Researcher's comments: "Women, youth, persons with disabilities" are groups who are **broadly** seen as being vulnerable, though not everyone in these groups may be actually vulnerable. Yes, aged and retired persons represent a useful addition to the list and I will add this. Depending on the context other groups could also be added e.g. refugees, internally displaced persons individuals, religious minorities....

Equity

- *These additional three are all important; although you would assume that access to reproductive health services would be included in access to basic social services/fair access to social services and goods. While land ownership can make huge differences, it can be one of many entrepreneurial opportunities. Further, again, housing opportunities need to be a part of social services support.*

Researcher's comments: The role of reproductive services is well noted and is integrated into the indicator set for equity as well as a new measure to address security and access to tenure for land and shelter. Given the current focus/shift toward dense urbanization, I am not sure whether/how broader access to land ownership can be realized in the city? For those who do own land it is certainly a source of entrepreneurial and other advantages. Secure housing and especially home ownership - seems to cause changes in people's outlook and community engagement if they continue to live in their community (Manturuk et al 2012); so secure home ownership - whether an apartment, house, hut ...is an important aspect of equity, which has implications for inclusion and social cohesion. The entrepreneurial measures will be kept under the Inclusion construct.

Openness

- *Most important here, what about public libraries and open archives!!! Finally the IPR question is EXTREMELY critical.*

Researcher's comments: A new indicator for addressing the intellectual property rights regime (IPR) is now included under the Openness construct. This will seek to assess the balance between creator's rights and those of the public such as development of the public domain.

Universal Access

- *The affordability and the access to internet as well as their synchronization/interoperability with the available traditional and local knowledge, and socio-cultural infrastructures are key elements to Validate the Knowledge City Maturity Model;*
- *Most important here, what about public libraries and open archives!!! Finally the IPR question is EXTREMELY critical.*

Researcher's comments: The affordability, accessibility and safety aspects of Internet have now been reflected in the revised set of indicators that will be presented in Round 3. Socio-cultural issues with regards to interplay of traditional knowledge and culture are picked up under the Cultural and Linguistic diversity construct and the public libraries and archives are also incorporated within the Universal Access construct. A new indicator for addressing the intellectual property rights regime (IPR) is now included under the Openness construct.

Cultural and Linguistic Diversity

- *Survival of cultural expressions is very important in the Validating a Knowledge City Maturity Model because each locality, country and region has its own history and its cultural influence.*

Researcher's comments: This is now reflected in the revised set of indicators under this construct. Aspects related to local knowledge preservation and intergenerational influences is also captured under the Universal Access to Knowledge and Education for All constructs.

Education for All

- *While I do not know what, I just felt that something is missing here. Maybe its the lack of specificity of what human talent is. I think I mentioned this before, that "all" is a construct that covers not only the young, but also the old and the differently-abled. I just thought that the indicators, like the previous one, is blind to differences.*

Researcher's comments: "As a rule of thumb, 60% of the jobs 10 years from now haven't been invented yet!" Thomas Frey. The rapid changes in jobs, society, values etc. demand that we nurture human talent (human capital) the ability to learn to learn and acquire the skills, attitudes, empathy, experiences to cope in these dynamic environments. While there is a focus on primary education in the international development goals, there is research that says we actually need to start at kindergarten to develop thus human talent (capital). We also need to support life-long learning. So how is the overall education system – school and others supporting citizens to develop the ability to contribute to increasing their diverse potential and also contributing to addressing the challenges and support the achievement of their community's strategic goals? In light of the above, I hope the idea of human talent is better understood.

Quantitative Assessment

¹Thomas Frey, "55 jobs of the future that don't exist today", <http://www.futuristspeaker.com/2011/11/55-jobs-of-the-future/>

Assessment of In and Between Round Consensus

As in the previous round, a quantitative analysis of the panel's opinion of the model and indicator sets was undertaken (Holey et al., 2007; Linstone & Turoff, 1975). In addition to the within round trends, attention was also given to the change in the opinions of the panel between rounds. A comparison of the changes in opinion as well as the evolution of the indicator sets was investigated and **Table X** presents these findings. Non-parametric testing of the stability of group opinions between rounds was also undertaken (Linstone & Turoff, 1975). The following analyses were conducted: a) Assessment of the percentage of majority opinions, b) Average percentage of majority of opinions, c) Assessment of median and interquartile ranges, d) Test of between round stability of opinion and e) Ranking analysis of revised indicator sets.

For between round comparisons of shifts in opinions, the analysis considered successive rounds as statistically dependent. In line with this viewpoint, the between rounds comparison utilized a reduced dataset based on the subset of 27 experts who participated in both rounds.

Percentage of Majority Opinions

More than 51% of panelists participating in the second round of the Delphi study expressed agreement with the revisions made to the indicator sets and the knowledge-based development model. Levels of agreement across the various constructs under study ranged from 83.8 % to 94.7%.

In contrast, the levels of agreement in round 1 ranged from 56.3 % to 87.9 %. Therefore the responses show both a higher level of consensus as well as a narrowing in the agreement levels. Tables 8 and 9 reflect these patterns.

Average Percentage of Majority of Opinions (APMO)

The calculation of the Average percentage of majority of opinions (APMO) indicated a value of 89.7% for consensus. On the basis of the APMO, within round consensus was achieved with respect to the model's ability to capture the concepts in the UNESCO Knowledge Societies Conceptual Framework (92.1%), as well as the indicator sets proposed for the Pluralism (92.1%) and the Inclusion (94.7%) constructs. The Openness construct with an APMO value of 89.2% was near consensus. The additional constructs being investigated received scores as follows:

- Proposed knowledge-based development model – 84.2%
- Cultural and Linguistic Diversity – 83.8%
- Freedom of Expression – 86.5% and
- Education for All 86.5%

EQUATION 1: AVERAGE PERCENTAGE OF MAJORITY OPINIONS (COTTAM ET AL., 2004)

$$APMO = \frac{\text{Majority Agreements} + \text{Majority Disagreements}}{S \text{ opinions expressed}}$$

$$APMO = \frac{266 + 3}{300} = 0.897; 89.7 \%$$

The value of the APMO for the second round (89.7%) was much greater than the value calculated for the first round (76.7%), this too points to increasing consensus.

Assessment of Median and Interquartile Ranges

The Likert-scale questions used in the study can be considered to represent ordinal or interval scales, consequently the median and inter-quartile range represent appropriate and valid statistical measures of central tendency and dispersion. The median provides insights into the “average” level of consensus while the interquartile range provides insights into the divergence of perspectives amongst the panelists (Gracht, 2012; Murphy et al., 1998). For items measured on a 5-point Likert Scale an interquartile range of 1 signifies consensus (Gracht, 2012; Raskin, 1994; Rayens & Hahn, 2000).

Table 1, indicates that all constructs assessed in round 2 had median values of 4, which corresponded to the Likert-scale ratings of “Good”. With the exception of the Education for All, the constructs studied exhibited inter-quartile ranges of 1 or less. For the constructs related to the assessment of the knowledge-based development model, pluralism and cultural and linguistic diversity, interquartile ranges of 0 were recorded; the inclusion construct also exhibited an inter-quartile range of 0.5. These values indicate a dense clustering of opinion and thus a high level of agreement amongst the panelists. When considering the changes between rounds, convergence between the third quartile (Q3) and first quartile (Q1) can be seen, this points to a clustering and convergence of opinions. On the basis of an inter-quartile range of 1, convergence of opinion in Round 2 can be seen across all constructs.

TABLE 1: MEDIAN AND INTER-QUARTILE RANGES FOR ROUNDS 1 AND 2

	UNESCO		KBD		Pluralism		Inclusion		Openness		Free of Expr		Cult. & Ling		Educat.	
	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2
	Median															
	4	4	4	4	4	4	4	4	4	4	5	4	4	4	4	4
	Q3	4	5	4	4	4	4	4.5	5	5	5	5	4.5	4	5	5
	Q1	3	4	3	4	3	4	3.5	4	4	4	4	4	4	3.5	4
	Interquartile range (Q3 - Q1)	1	1	1	0	1	0	0.5	0.5	1	1	1	0.5	0	1.5	1

Test of Between Round Stability of Opinion

The between round stability of opinion provides an assessment of the stability of the panelists’ vote distribution curve over successive rounds (Linstone & Turoff, 1975). During any Delphi study it is expected that the group consensus will shift from round to round. Where these shifts are large, this indicates low stability. A between round oscillation within a 15% +/- range is considered to indicate between round stability in the panel’s opinion and a convergence of opinions.

Figures 1 and 2 as well as Table 2 present the frequency distributions of the opinions of panelists from Round 1 and Round 2 with respect to the proposed knowledge-based development model.

Round 1: From a big-picture or macro-level policy perspective how do you assess the Proposed Knowledge-based Development Model's representation of the role of knowledge in driving/supporting development?

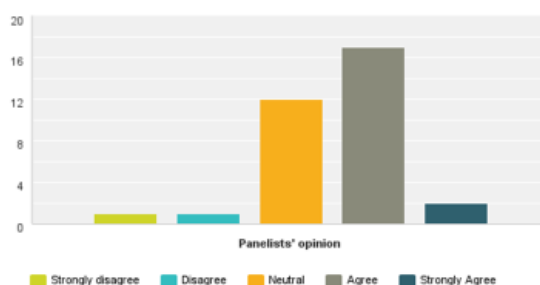


FIGURE 1: DISTRIBUTION OF PANELISTS OPINIONS ON THE PROPOSED KNOWLEDGE-BASED DEVELOPMENT MODEL DURING ROUND 1

Round 2: From a big-picture or macro-level policy perspective how do you assess the revised Knowledge-based Development Model's representation of the role of knowledge in driving/supporting development?

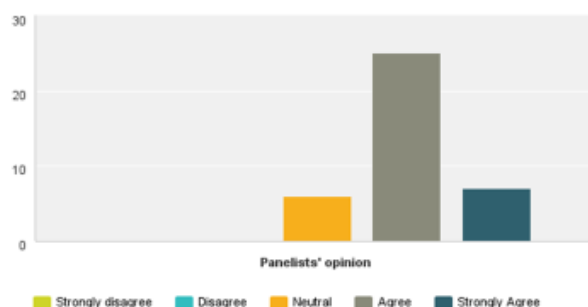


FIGURE 2: DISTRIBUTION OF PANELISTS OPINIONS ON THE REVISED PROPOSED KNOWLEDGE-BASED DEVELOPMENT MODEL DURING ROUND 2

TABLE 2: PANELISTS OPINIONS AND ASSOCIATED FREQUENCIES ON THE ADEQUACY OF THE PROPOSED KNOWLEDGE-BASED DEVELOPMENT MODEL

		Panelists' Opinions					Total
		Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	
Round 1	Number of panelist	1	1	12	17	2	33
	%	3,03%	3,03%	36,36%	51,52%	6,06%	
Round 2	Number of panelist	0	0	6	25	7	38
	%	0.00%	0.00%	15.79%	65.79%	18.42%	

The between rounds stability analysis involves considering the actual frequency distribution of votes in each round and then determining the absolute value of the between round change of the panels opinions. By summing the absolute difference for these rounds the magnitude of this change can be determined. To determine the total net change we divide by 2, to determine the

proportionate change in opinion we therefore divide the net change by the number of participants. As mentioned earlier, the number of panelists participating in both rounds was 27, so in the calculation of between round stability only their views were taken into account in assessing between round stability of opinions. This group of experts comprised 84.4% and 72.9% respectively of the participants in rounds 1 and round 2 who completed the study.

The between round stability calculations (See Table X+2) indicates that the change in the distribution of panelists' response exceeds 15%, so further rounds are required to achieve consensus. When this analysis was conducted for the Openness (7.4%), Freedom of Expression (11.1%) and Cultural and Linguistic Diversity (7.4%) constructs, levels of change below the 15% cut-off indicating were observed indicating between round stability of opinions. The values for the Education for All (14.8%) were marginal suggesting need for additional work. The tabulated analyses can be seen in the Appendix.

Table 3 summarizes the results of the quantitative assessments of in / between round consensus, convergence and stability. It would be noted that the weakest performance is associated with the adequacy of the proposed knowledge-based development model and the Education for All construct. These two constructs will be investigated further in the third round of the Delphi study.

TABLE 3: PERFORMANCE OF CONSTRUCTS ON THE QUANTITATIVE TESTS OF IN / BETWEEN ROUND CONSENSUSES

Construct	Consensus Achieved When Assessment Applied? (Yes / No)				Construct must be Included in Round 3? (Yes / No)
	Panelists Consensus > 51%	APMO	Interquartile Range & Median	Between Round Stability of Opinions	
<i>Coherence with the UNESCO Conceptual Framework</i>	Yes ^{\$}	Yes ^{\$}	Yes	----	No
<i>Adequacy of KBD Model</i>	Yes ^{\$}	No	Yes	No	Yes
<i>Pluralism</i>	Yes ^{\$}	Yes ^{\$}	Yes	----	No
<i>Inclusion</i>	Yes ^{\$}	Yes ^{\$}	Yes ^{\$}	----	No
<i>Openness</i>	Yes ^{\$}	Yes [#]	Yes	Yes ^{\$}	No
<i>Freedom of Expression</i>	Yes ^{\$}	No	Yes	Yes	No

<i>Cultural & Linguistic Diversity</i>	Yes ^{\$}	No	Yes ^{\$}	Yes ^{\$}	No
<i>Education for All</i>	Yes ^{\$}	No	Yes [#]	Yes [#]	Yes
Notes: -- : Omitted due to strong performance on APMO X ^{\$} : Strong performance on measure X [#] : Marginal performance, on verge of threshold measure					

Ranking Analysis of Revised Indicator Sets

During Round 1, panelists proposed additional indicators to enhance the assessment of the constructs in the model. On the basis of the quantitative and qualitative assessments of their contributions the indicator sets were modified. The new proposals were included either as distinct indicators or as components of an existing indicator. Panelists were then invited to rank the revised indicator sets based on their perceived importance of the individual components. In cases where the revised set consisted of more than five items the fifth highest ranked items would be retained.

Inclusion

TABLE 4: CHANGE IN RANKINGS WITHIN THE INDICATOR SET FOR THE INCLUSION CONSTRUCT

Rank	Round 1	Round 2
1	Access to basic social services	Access to basic social services (health care, shelter, primary and secondary education etc)
2	Access to safe and decent work opportunities	Access to safe and decent work opportunities
3	Access to civic and political space	Level of support for the participation of vulnerable groups (women, youth, persons with disabilities) in economic activities
4	Level of support for women's participation in economic activities	Access to civic and political space
5	---	Access to credit/training (Level of support for entrepreneurial activity)

As can be seen in the above Table the revised measure for the participation of vulnerable groups in economic activity rose in the importance rankings relative to other components.

Equity

TABLE 5: RANKINGS FOR THE INDICATOR SETS IN ROUNDS 1 AND 2 FOR THE EQUITY CONSTRUCT

Rank	Round 1	Round 2
1	Access to basic social services	Access to entrepreneurial opportunities (including credit / finance and training)
2	Evenness in the distribution of social costs and benefits	Access to land ownership
3	Adequate communication and fair access to social services and goods	Access to reproductive health services
4	Gender mainstreaming in policy	---

An additional set of three indicators were ranked in importance. Based on the feedback received from the panel, reproductive health services will be integrated with basic social services and a fifth indicator that assesses access to property ownership/ security of tenure (land and housing) added. The measure for entrepreneurial opportunities will be maintained under the Inclusion construct.

Openness:

TABLE 6: CHANGE IN RANKINGS WITHIN THE INDICATOR SET FOR THE OPENNESS CONSTRUCT

Rank	Round 1	Round 2
1	Transparency and participation in public policy/decision-making processes	Transparency in public policy/decision-making processes
2	Willingness to explore unconventional approaches to solving societal challenges	Participation in public policy/decision-making processes
3	Promotion of open standards	Willingness to explore unconventional approaches to solving societal challenges
4	'---	Promotion of open standards
5	'---	Protection of personal privacy and personal data

Transparency and participation continued to maintain leading rankings in the re-evaluated indicator set.

Freedom of expression:

TABLE 7: CHANGE IN RANKINGS WITHIN THE INDICATOR SET FOR THE FREEDOM OF EXPRESSION CONSTRUCT

Rank	Round 1	Round 2
1	Social climate for free discussion and exchange	Social climate for free discussion and exchange
2	Diversity, sustainability and independence of media channels	Diversity, sustainability and independence of media channels
3	Independence, effectiveness and transparency of public broadcasting services	Independence, effectiveness and transparency of public broadcasting services
4	Professional standards amongst media practitioners	Professional standards amongst media practitioners
5	'---	Media (on/off-line) regulatory frameworks

The original set of indicators maintained their earlier rankings.

Universal Access to Information:

The updated set of indicators revealed a decreased importance attached to the building of human capacity to use ICT as compared to issues of affordability, accessibility and safety. The relative positions of the other two indicators in the earlier set did not change. The importance of public transportation systems as a contributor to knowledge and information flows was reaffirmed. The distinctiveness of the indicators ranked 6th and 7th which focus on aspects not captured under other constructs nevertheless merit their inclusion.

TABLE 8: RANKINGS OF INDICATOR IN THE EXTENDED SET FOR THE UNIVERSAL ACCESS TO INFORMATION AND KNOWLEDGE CONSTRUCT

Rank	Round 1	Round 2
1	Efforts to build human capacity to use ICT	Affordability, accessibility and safety of Internet services;
2	Affordability of Internet services	Efforts to build human capacity to use ICT;
3	Availability of on-line access to government services	Access to reliable and affordable power supply;
4	Adequacy and accessibility of the public transportation system	Availability of on-line access to government services;
5	'---	Adequacy and accessibility of the public transportation system;
6	'---	Presence of knowledge clusters (local/regional) and communities of practice
7	'---	Support for traditional/local knowledge (preservation, valorization and use);

The indicator for presence of knowledge clusters is expanded to reflect the role of libraries and archives as follows: presence of knowledge clusters, communities of practice, archives and libraries.

Cultural and Linguistic Diversity:

TABLE 9: RANKINGS OF INDICATOR IN THE EXTENDED SET FOR THE CULTURAL AND LINGUISTIC DIVERSITY CONSTRUCT

Rank	Round 1	Round 2
1	Support for the city's breadth of heritage and cultural expressions	Level of capacity building in cultural expression sector
2	Fostering and promotion of multilingualism	Level of cultural heritage preservation efforts
3	Recognition and promotion of cultural industries	Fostering and promotion of multilingualism
4	---	Presence of local culture and languages in digital media
5	---	Recognition and promotion of cultural industries

The relative positions of the initial indicators did not change, the relation between digital media and local culture and language was seen as more important than efforts to promote cultural industries.

Education for All:

While making the coverage of education for all construct more comprehensive, the additional indicator did not impact the perceived importance of the earlier set of indicators.

TABLE 10: RANKINGS OF INDICATOR IN THE EXTENDED SET FOR THE EDUCATION FOR ALL CONSTRUCT

Rank	Round 1	Round 2
1	Ability of the city to nurture its human talent	Ability of the city to nurture its human talent
2	Ability to attract and retain talent	Ability to attract and retain talent
3	Efforts to enhance citizens' media and information literacy (digital literacy)	Efforts to enhance citizens' media and information literacy (digital literacy)
4	Support for global citizenship education	Support for global citizenship education (intercultural competence)
5	'---	Support for inter-generational transfer of traditional and local knowledge.

TABLE 11: LEVEL OF CONSENSUS ACHIEVED DURING THE SECOND ROUND OF THE DELPHI STUDY USING APMO METHOD (COTTAM ET AL., 2004). APMO = 89.7%

Question	No. Agreeing	% Agreeing	No. Disagreeing	% Disagreeing	No. Undecided	% Undecided	No. of Opinions	Consensus (Yes /No)
Q5. Based on the background information provided, how well does the knowledge-based development model capture the concepts presented in the UNESCO's Knowledge Societies Conceptual Framework?	35	92.1	0	0	3	7.9	38	Yes
Q6. From a big-picture or macro-level policy perspective how do you assess the Proposed Knowledge-based Development Model's representation of the role of knowledge in driving or supporting development?	32	84.2	0	0	6	15.8	38	No
Q9. Taken together as a group, in your view, how adequately does the revised set of indicators serve as proxies for assessing the Pluralism climate / environment of a city?	35	92.1	0	0	3	7.9	38	Yes
Q11. Taken together as a group, in your view, how adequately does the revised set of five proposed indicators serve as proxies for assessing the level of Inclusion in the city?	36	94.7	1	2.6	1	2.6	38	Yes
Q16. Taken together as a group, in your view, how adequately does the revised set of five indicators serve as proxies for assessing the level of Openness in the city?	33	89.2	0	0	4	10.8	37	No
Q19. Taken together as a group, in your view, how adequately does the revised set of five indicators serve as proxies for assessing Freedom of Expression in the city?	32	86.5	0	0	5	13.5	37	No
Q24. Taken together as a group, in your view, how adequately does the revised indicator set serve as proxies for assessing the Cultural & Linguistic Diversity of the city?	31	83.8	1	2.7	5	13.5	37	No
Q27. Taken together as a group, in your view, how adequately does the revised set of indicators serve as proxies for assessing the Education for All construct within the city?	32	86.5	1	2.7	4	10.8	37	No
Totals	266		3		31		300	

TABLE 12: EVOLUTION IN CONSENSUS AND NUMBER OF CONSTRUCT INDICATORS FROM ROUNDS 1 TO 2

Question	Round 1 APMO = 76.7%			Round 2 APMO = 87.9%		
	% Agreeing	No. of Indicators	Consensus (Yes /No)	% Agreeing	No. of Indicators	Consensus (Yes /No)
Q4. Based on the background information provided, how well does the knowledge-based development model capture the concepts presented in the UNESCO's Knowledge Societies Conceptual Framework?	57.6	--	No	92.1	--	Yes
Q7. From a big-picture or macro-level policy perspective how do you assess the Proposed Knowledge-based Development Model's representation of the role of knowledge in driving or supporting development?	57.6	--	No	84.2	--	No
Q11. Taken together as a group, in your view, how adequately do these five indicators serve as proxies for assessing the Human Rights and Needs climate/environment of a city?	87.9	5	Yes	--	5	--
Q14. Taken together as a group, in your view, how adequately do these four indicators serve as proxies for assessing the Pluralism climate/environment of a city?	65.5	4	No	92.1	4	Yes
Q17. Taken together as a group, in your view, how adequately do these four proposed indicators serve as proxies for assessing the level of Inclusion in the city?	75.0	4	No	94.7	5	Yes
Q20. Taken together as a group, in your view, how adequately do these four proposed indicators serve as proxies for assessing the level of Equity in the city?	75.0	4	No	--	5	--
Q23. Taken together as a group, in your view, how adequately do these three indicators serve as proxies for assessing the level of Openness in the city?	81.3	3	Yes	89.2	5	No
Q26. Taken together as a group, in your view, how adequately do these four indicators serve as proxies for assessing Freedom of Expression in the city?	87.5	4	Yes	86.5	5	No
Q29. Taken together as a group, in your view, how adequately do the four proposed indicators serve as proxies for assessing Universal Access to Information in the city?	56.3	4	No	--	5 to be selected from 7	--
Q32. Taken together as a group, in your view, how adequately do these three proposed indicators serve as proxies for assessing the Cultural & Linguistic Diversity of the city?	71.9	3	No	83.8	5	No
Q35. Taken together as a group, in your view, how adequately do these four proposed indicators serve as proxies for assessing the Education for All construct within the city?	75.0	4	No	86.5	5	No

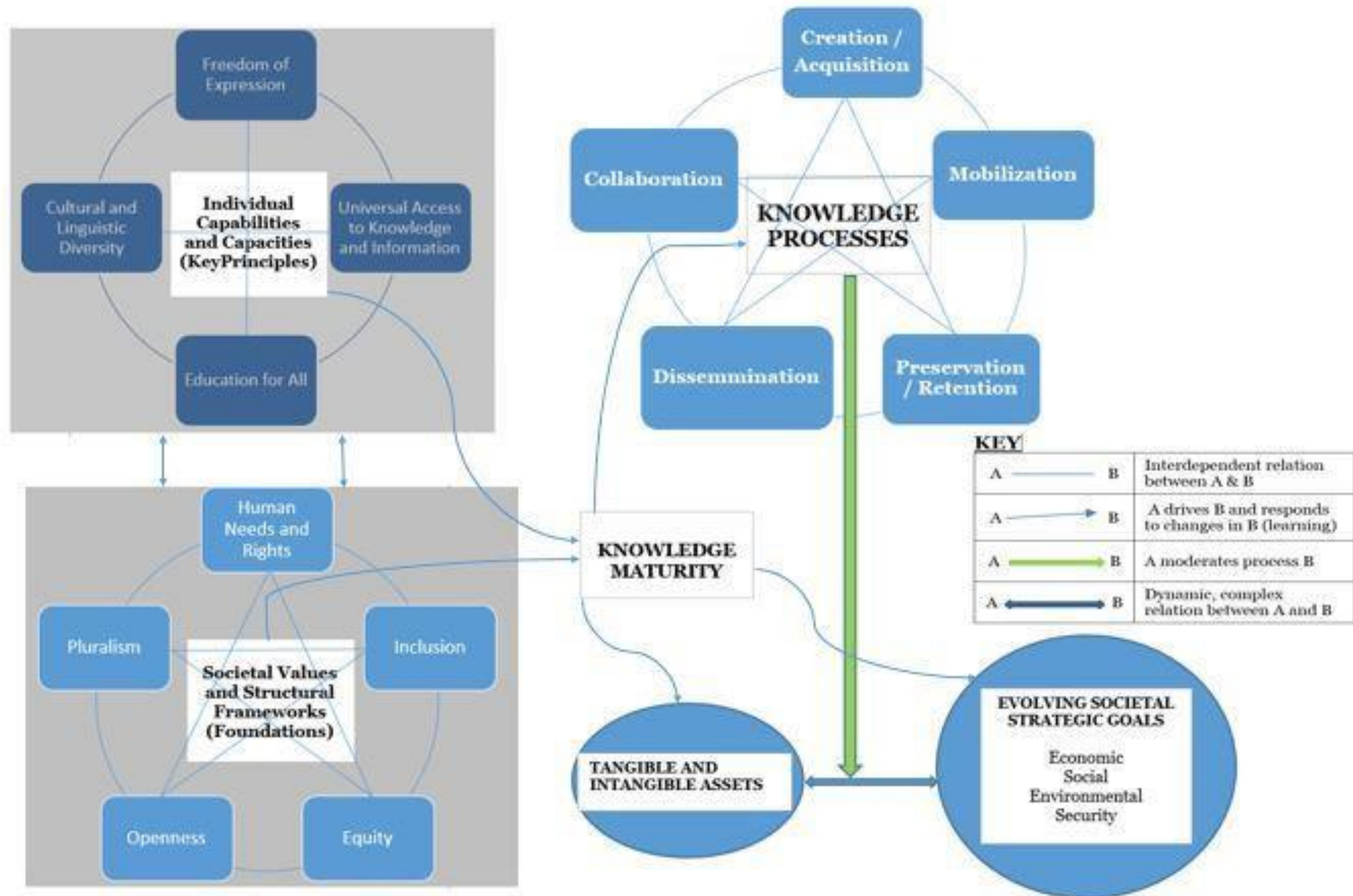


FIGURE 3: REVISED KNOWLEDGE-BASED DEVELOPMENT MODEL FOLLOWING COMMENTS RECEIVED FROM DELPHI PANELISTS IN ROUND 2

APPENDIX

Responses to Optional Open-ended Questions

Overview

Some underlying assumptions and information presented in the background paper; modifications introduced in response to panelists' recommendations and/or addressed in the first round report were raised and questioned by panelists in the second round. This could be a result of the conceptual or epistemological positions of panelists, insufficient time by panelists to review these documents or perhaps insufficiently clear explanation/ misunderstanding by the researcher.

Illustrations of the foregoing include:

"I am not really sure why support to entrepreneurial activity, is specified here"

"Decent work opportunities" should be clearer defined as the perception of "decent" may be culturally and socially dependent.

"Promotion of open standards is not clear to me. If you mean standards in the narrow sense (e.g. ISO), then it is difficult to see a major role for municipal administrations or for city-oriented policies.

Knowledge-based Development Model

As mentioned, amongst the optional questions, panelists gave greatest attention to Question 7. Four broad categories of comments were observed.

The first group of comments expressed satisfaction with the revised model: Examples of such statements include:

- *The information society is a knowledge society, too. This model combines the holistic approach of development (needs, keys, goals) and the knowledge-centered thinking. I like the logical system behind the model - the focus in knowledge processes, the use of knowledge maturity, and the clear relations between assets, goals and knowledge.*
- *The revision emphasizes that, Economies become "weightless" when the revised knowledge-based model is adopted. This gives birth to a new development paradigm.*
- *Model looks good - would advise against any further additions otherwise the diagram will become overly complex.*

Researcher's comments: Thank you for your encouragement!

The second group (~ 50%) indicated at least one aspect of the model that could be improved. There was considerable overlap in these recommendations which provided suggestions related to ensuring a better graphical depiction of the interdependencies and relationships in the model as well modifying the terms used in the model so as to place greater emphasis on knowledge management rather than information management processes. Examples of such statements include:

- *Glad to see the addition of collaboration in the knowledge processes. Knowledge cannot, of course, be disseminated; information is disseminated, knowledge is mobilized.*

- *I think there could be a double arrow to/from the Knowledge Maturity box and the two central boxes Societal Values and Individual Capabilities...*
- *1) Creation might be better expressed as Creation/Acquisition 2) Application/Use may be better expressed as Mobilization 3) Preservation suggests very long-term activities to make the information usable*

Researcher's comments: Various aspects raised are reflected in the revised model that the panel will assess in Round 3.

The third group (~13.2 %) pointed to what they saw as limitations in the model:

- *The model still focuses on processes associated to knowledge life cycles (knowledge objects management)*
- *Suggest to create a layered model; the one suggested to me seems to be to "flat"*
- *The economic disputes are not covered by the model. A UNESCO's KSC Framework should address these issue in order to better identify beneficiaries of it.*
- *I find it important also to show overtly the need for individuals to be able to distinguish between trustworthy and not trustworthy information - ie. the ability to be critical of the sources of information.*

Researcher's comments: these comments have been noted and are being followed-up through reviews of the literature and exchanges with specific panelists.

The fourth group (~5.3 %) emphasized the importance of empirical testing of the model. Examples of such statements include:

- *At this point, until a model is operationalized with measurements and indices, it is as good on paper as the World Bank's KAM or any pillared model.*
- *The links between capabilities and values on the one hand and knowledge maturity on the other should be studied objectively: if not the arrows represent only political correctness and not a scientifically verified process.*

Researcher's comments: This study involves a field application of the model, in up to 3 primate cities. Full development would require a post-doctoral phase where multiple field tests and other statistical analyses could be carried out.

Human Rights

A number of experts reiterated their satisfaction with the proposed indicator set:

- *I think this covers it very well...nice job!*
- *I feel these are quite consensual across most organisms and countries*
- *Clear and comprehensive*
- *The construct is perfect because needs are varied from country to country, region to region and continent to continent*
- *I am pleased with the current outcome*

Other experts raised concerns about what they regarded as limitations of the proposed indicator set:

- *In the face of challenges such as climate change and sustainability "human responsibility" must take precedence over human rights*

- *So what? I can see all of those in place in the development sector at an official measurable level but poverty, corruption and the like continue.*
- *The model does not cover private sector policies only those related to public and governmental activities*
- *How can a weighting factor for indicators be introduced?*

Researcher's comments: The human rights instruments allocate rights as well as responsibilities at all societal levels. In practice, both those with rights and responsibilities are inadequately informed either to claim or to exercise their rights. Some rights are positive, requiring an action while others are negative implying steps to prevent certain action. Exercising one's rights and responsibilities is not a passive process. The first step is to learn about the content of these human rights and then take collective actions. The rights-based perspective rather than retarding will provide the context for support sustainable and ethical solutions to global problems.

Considerable progress continues to be made as societies and individuals evolve. However, it seems that as part of our in-built survival "equipment" we give more weight to negative outcomes and negative information than to positive ones. Proportionally there are fewer impoverished persons today and corrupt officials are more likely to be sanctioned. Much of this change I think is due to making more persons aware of their rights and duties and empowering them to act as well as collective efforts to promote human rights based development.

Human rights are international, they cover every aspect of societal life, even the waging of war. The private sector is not beyond the jurisdiction of either international or national law. The rise of investment vehicle that emphasize such aspects as sustainability, gender/family-friendly, ethical values points to the recognition by early adopters in the private sector of the relevance of human rights to their bottom-line. Research by Nobel laureates in economists such as Stiglitz and is providing empirical support for human rights as a source of growth.

The ranking of the indicators is a first crude approach to developing initial weightings for indicators and constructs. These weights will necessarily need to be modified for local conditions.

Pluralism

A number of experts expressed satisfaction with the proposed indicator set:

- *The additional indicators are valid to improve assessing of Pluralism.*
- *Appear as well structured and diverse competing interests for a city which translate to a democratic equilibrium*
- *I do think that it will provide a good measure of a cities realities . And in tandem with economic/financial indicators, it could give city governments a good tool for vision setting and measuring progress.*
- *Nuances in pluralism well captured*
- *I fully agreed with as I see the Pluralism as the meaning of acceptance, tolerance, respect, assimilation and integration.*

Other experts raised concerns about what they regarded as limitations of the proposed indicator set:

- *The flip side of pluralism - concentration or dominance - should also be factored as they can coexist.*

- *Pluralism" as defined here i.e. "does not remove differences but sees diversity as a collective source of common good, which when enabled, becomes a foundation for social cohesion." - This is all well but is practically and deeply rooted in the access to a wide range of different opportunities for stakeholders - the gateway to educational, financial, social and economic as well as job opportunities are often gate kept by clusters of power structures, who's interest may not be to enhance "pluralism". This could be an Achilles heel in this concept unless a mitigating factor is identified and articulated.*
- *Im not at all sure how to do this but Cognitive Diversity is more important for better outcomes then gender or ethnic diversity indicators...may be worth trying to add them...*
- *Honestly speaking, you require quite a lot in background knowledge and to know about the sources you refer to. I am not sure if all your panelist are informed about these?*

Researcher's comments: Yes, I agree that concentration or dominance co-exist with pluralism. Since our focus is on assessing pluralism then when dominance is high levels/values for pluralism that we measure will be low etc. So just because we are focusing on and assessing pluralism doesn't mean that adverse impacts on the indicator are ignored.

The definition for pluralism represents the ideal situation. The point of the model and indicator is to assess where the particular city lies with respect to this ideal. Then from the model draw inferences about how the level of pluralism affects the ability of the city to set and attain strategic development goals. Then make recommendations on what may be done.

Cognitive diversity, according to Miller et al. (1998), is the extent to which groups can effectively draw on the different knowledge of their members - including beliefs, preferences and perspectives - to solve common problems and achieve shared goals. Cognitive diversity is therefore crucial for creativity and innovation. From my perspective, cognitive diversity and pluralism have a lot in common. So, attitudes to gender, ethnicity etc. give hints about the level of cognitive diversity.

Yes, but even when we are examining the same problem, what we understand/perceive as relevant or the boundaries of the situation will be different – take the story of the blind men and the elephant. In complex issues that are new, context/cultural/gender...dependent these challenges are further magnified, then wearing our disciplinary/expert lenses.... Hopefully through this Delphi study we can bring more pieces of the mosaic together and together see more of the city....

Inclusion:

A number of experts expressed satisfaction with the proposed indicator set:

- *Access to basic social services lead to informed access to civic and political space which when combined with support for participation of vulnerable groups lead to equity in support for entrepreneurial activities which creates safe and decent especially in developing countries.*
- *I like it. Supporting of vulnerable groups will generate multiple positive effects in given society. Nowadays maybe must give the solution to participate and learn, and we must awake the need for information and for change - than the knowledge will find the ways to people via a lot of channels (from MOOCs to local schools, mentors etc.).*

Other experts raised concerns about what they regarded as limitations of the proposed indicator set:

- *Some of these indicators can be influenced by municipal governments, but most are far removed from their levels of authority. Thus we are really speaking mainly about national policies, which weakens the link to cities (or at least to a single city). One option would be to break the criteria down according to their relevance local and/or national level action/policy.*
- *“Decent work opportunities” should be clearer defined as the perception of “decent” may be culturally and socially dependent.*
- *a) Access to safe and decent work opportunities, How do you define “decent” work opportunity? b) Level of support for the participation of vulnerable groups (women, youth, and persons with disabilities) in economic activities would retired or aged individuals also need to be included in “vulnerable groups”?*
- *I miss a definition of “civic and political space” - what does this mean exactly?*

Researcher’s comments: This research is focused on primate cities in developing countries. A primate city is the most important city in a nation in terms of its national cultural, political, economic and financial influence. Primate cities are sometimes national capitals. Policies that make sense for a particular city may be irrelevant for other cities and regions in that nation. Elected city leaders are accountable to their citizens, so leaders must manage the tension between local and national priorities. City leaders often serve longer in their roles than do national leaders so their motivations, constituencies, priorities and time-frames may not coincide. Ultimately, questions of autonomy over resources, priorities and policies at the various national administrative levels are resolved politically, because of their influence, primate cities can have greater latitude in these processes.

But even where national political forces do not favor cities, as shown by thousands of examples, cities leaders with the support of their population do take steps to develop and implement city laws and ordinances, projects and programmes. Furthermore, through bilateral partnerships, regional and international coalitions (e.g. Sister City Networks; The Global Network of Cities, Local and Regional governments; International Coalition of Cities Against Racisms; C40 Cities and many others) cities around the world are pooling resources, exchanging ideas, creating visibility and developing projects to address and implement internationally agreed programmes of action in areas such as climate change, settlement of refugees, trade etc. even when there are divisions at the national level about what to do. The political capital of these networks enable municipal leaders to accomplish tasks and effect changes that are beyond their defined authority.

Cities can, will and do act on issues which they consider relevant. The dichotomy between national and local indicators is not as sharp as your comment would suggest.

As indicated in the report for round 1, “Decent work²” is an internationally recognized term which sums up the aspirations of people in their working lives. The International Labor Organization (ILO), the UN body with a mandate in this area defines this as “opportunities for work that is productive and delivers a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives and equality of

² International Labour Office (2012). *Decent work indicators: Concepts and definitions*, Retrieved from http://www.ilo.org/wcmsp5/groups/public/---dgreports/---integration/documents/publication/wcms_229374.pdf

opportunity and treatment for all women and men”. So what is a “fair income” will always depends on the context (cost of living, qualifications, risks...).

The idea of civic and political space is related to the concept of a commons. Through the creation of policies and conditions citizens, communities, civil society organizations can be enabled to assemble, meaningfully legitimate engage with government and other stakeholders to discuss, express viewpoints on matter of public concern and influence/participate in governance processes³. This also relates to the idea that actual space can be given to communities which they can shape to reflect and reaffirm their identities, concerns⁴.

Equity:

Comments expressing satisfaction with the proposed indicator set included:

- *That is great. In Africa for example the vulnerable groups have no to say. Once the most vulnerable have their say the issue of the land ownership can be fixed*
- *Reproductive health services are strongly linked to population policies, smallest social unit of society and wome's rights as such will greatly enhance the other indicators selected.*
- *Reproductive rights are proving resilient to liberalization in other rights (e.g. increasing social acceptance of gay unions), therefore requiring more direct support.*
- *"Entrepreneurial opportunities" are critical!*

Other experts raised concerns about what they regarded as limitations of the proposed indicator set:

- *As for other indicators, I think this one is quite context dependent, i.e. is different in different regions, economies and political systems. It comes to my mind that UNESCO's aims (as any of the UN's programs, e.g. see "knowledge for sustainable development") are universal and need local instantiations.*
- *In my personal opinion, equity is about what is inside your head and not about what is in the outside. A good measure for a city is: how likely are the processes of a city to evaluate, and reward, the ideas of a person without consider his/her personal characteristics?*
- *A short definition of "basic social services" would be nice.*

Researcher's comments: Yes, context relevance is key. Hopefully, the indicators proposed are relevant to most places, but should not be seen as a universally comprehensive set, rather as an entry point for exploration. Implementation and empirical assessment are critical! A field-testing of the outcome of this study is planned.

I understand where you are coming from – the content of a person's character and ideas, not the color, height, gender, sexual orientation... So yes, helping people to reflect on and become aware of the criteria we use in determining who/what we consider credible will hopefully make us become more aware of sources of bias. But if we don't verify we can run into problems....

³ Here's is a case study that talks about creating political space as part of a peace-building process
http://www.stefanwolff.com/files/Kirkuk_Case_Study.pdf

⁴ What is a great civic space: http://www.pps.org/reference/benefits_public_spaces/

Access to basic social services relate to government assistance that seeks to meet the needs and bring improvements to the lives and living conditions of vulnerable groups. They address causes of exclusion and the inability caused by income poverty and social vulnerability that vulnerable groups face in obtaining shelter, medical care, food, education and other services that mainstream population can provide for themselves.

Openness:

Several experts expressed satisfaction with the proposed indicator set:

- *Openness helps in identifying zones of conflict of interest and on how to address them.*
- *This set is quite updated regarding current trends*
- *Transparency and participation of all (rich, poor) in the all process of public decision-making and its outcomes are absolute basic resources to reach the Openness in the city we want*

Other experts raised concerns about what they regarded as limitations or areas for improvement:

- *I wonder whether there is a need to include attitude towards in-migration as an indicator of social openness? I wonder also if there is a need to expand the definition of openness to include dimensions other than political (e.g. economic, social)*
- *In this case it is hard to rank. To me all of the items are on same level.*

Researcher's comments: The specific issues of migration is captured under the pluralism construct.

Unfortunately, this is one of the constraints that the particular survey tool imposes. Thank you for highlighting this!

Freedom of Expression:

Very few experts provided inputs on this construct. One experts expressed satisfaction with the proposed indicator set:

- *Very good. The media channels diversity, right regulations and its impacts will automatically occur if the regulatory framework is done in a transparent, and participative way; No one is left behind.*

Several experts shared similar conditions around aspects of regulation, professionalism and raised concerns about what they regarded as limitations of the proposed indicator set:

- *Should professional standards among media practitioners be a part of diversity, sustainability and independence of media channels?*
- *I assume that "regulatory frameworks" should be taken in a broad sense to mean legal (including constitutional) bases for freedom of expression. If you mean it in the narrow sense, I would put it in last place, because you could not have the others without an adequate regulatory framework. Once again (and more so) there is virtually nothing here that can be influenced at the municipal level (only societal climate and perhaps a part of media diversity).*
- *What's the background why regulatory framework is added? Just asking. Because it could be taken negatively as well, especially the regulation paradigm.*
- *This is rather complex because of the extraneous factors behind the freedom of expression*

Researcher's comments: I see these as separate aspects though not unrelated. The diversity - the variety, balance and disparity (difference) amongst the media channels that the city dwellers are able to access; sustainability - ability of the media channel to continue to carry out its function with regularity/quality; and independence - freedom from political/commercial and other pressures; are in a sense features of the market that I think are difficult to engineer. In some cases such as variety and sustainability these will depend on the size of the population in the city. On the other hand, professional standards while both individual and collective can be shaped through codes of practice, continuing professional development and even legislation.

Every city and every locale has its own tradition and shared norms of what is acceptable, excessive etc. This informal level of setting standards influencing/controlling behavior is a very powerful mechanism and sometimes more powerful than codified law. Municipalities as political structures also have the possibility through city bylaws, ordinances, taxes and other channels to effect change and support or diffuse the impact of national laws.

Universal Access:

Very few experts provided inputs on this construct, some panelists requested clarifications and also highlighted limitations:

My experience with availability of on-line access to government services in the first world has been very frustrating. I cannot imagine how transparency could be discouraged in countries where face-to-face interaction is limited.

- *Again, i think i raised in this in the previous panel, that the indicators seem to be assuming that different sets of people access information in the same way and have the same capacity to access information across time*
- *Most of these are very contextual, some societies would need a different focus.*

Researcher's comments: Providing online services that are not well-designed or take into account differences among users reduces the usability of the services and so will reduce use of the systems and transparency.

Yes, I acknowledge both of these limitations that you raise. Some of these challenges can only be addressed during implementation. I think based on the quantitative and qualitative feedback we are at least 80% towards capturing the key aspects of each construct. As with any field survey, during implementation a pilot would seek to assess and then expand or fine-tune the general indicator sets.

Cultural and Linguistic Diversity

Very few experts provided inputs on this construct, many expressed support for the indicators while other drew attention to the influence of context:

- *More emphasis is needed on facilitating the emergence and expression of cultural expressions from minorities, local interest groups, etc.*
- *These parameters differ from those of the other themes in that they can be much more effectively influenced at the local level; this should perhaps be taken into account in the study. Preservation efforts are extremely important but not as clearly linked to the question of DIVERSITY as the others.*
- *The presence of local culture and languages in digital media is of utmost importance for preservation of cultural and linguistic diversity. So much of this depends on what types*

of culture and language are there. I would answer this differently for Wales than for the US and so on.

Researcher's comments: Yes, here again we see support for the indicator sets proposed. Importantly whatever we do at the global level only becomes relevant when it is adapted locally and it makes senses for the end-user. So the indicator set have to be adapted.

Education for All:

Very few experts provided comments, those in favor had this to say:

- *I like the new indicator. Inter-generational cooperation are a very, very important things. Naturally not only in the knowledge transfer, but in the online (digital culture) and the offline (common work) world, too. In the information society (because of very speedily technological changes) the generations were separated and gave separated answers to challenges (elderly people vs digital natives etc.). We must work together.*
- *Very well laid out*
- *The proposed indicators are interconnected. These indicators will be automatically achieved once the terms of Education for All is reached in the practices.*

Other experts raised concerns about what they regarded as limitations of the proposed indicator set:

- *Where is the school system!! It is the most important factor of all, and in many countries also largely under local control.*
- *I think that the level of basic education for children and adults should be measured.*
- *I find these Education for All indicators a bit too "media" oriented. Also how will you address variances/spread between the elite and the bottom of society?*

Researcher's comments: "As a rule of thumb, 60% of the jobs 10 years from now haven't been invented yet⁵" Thomas Frey. The rapid changes in jobs, society, values etc. demand that we nurture human talent (human capital) the ability and the love for learning to learn and acquire the skills, attitudes, empathy to contribute and cope in these dynamic environments. The school systems are an important part of this process but need to be supplemented by other sectors as schools may not be sufficiently agile to equip learners to address the rapid societal changes and shifts citizens face throughout their life. So nurturing talent includes supporting schools but importantly lifelong learning, but also kindergarten as well as other crucial life-skills often acquired through extra-curricular and informal ways.

In the context of the changing social environment what should these basic education criteria be?

Being able to create conditions where foreign talent wants to come to your city to live and work; creating conditions where your citizens feel fulfilled and are not leaving in droves; preparing your citizens to compete in a global space in my view do not represent a media-oriented approach to education.

⁵Thomas Frey, "55 jobs of the future that don't exist today", <http://www.futuristspeaker.com/2011/11/55-jobs-of-the-future/>

Supporting Tables for Between Rounds Stability Analysis

TABLE 13: PANELISTS OPINIONS AND ASSOCIATED FREQUENCIES OF EXPERT PARTICIPATING IN BOTH ROUNDS OF THE ASSESSMENT OF THE ADEQUACY OF THE PROPOSED KNOWLEDGE-BASED DEVELOPMENT MODEL

		Panelists' Opinions					Total
		Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	
Round 1	Number of panelist	0	1	10	11	5	27
	%	0	3.7%	37.0%	40.7%	18.5%	
Round 2	Number of panelist	0	0	3	15	9	27
	%	0.0%	0.0%	11.1%	55.6%	33.3%	

TABLE 14: BETWEEN ROUND STABILITY ANALYSIS FOR THE OPENNESS CONSTRUCT

Q16. Taken together as a group, in your view, how adequately does the revised set of five indicators serve as proxies for assessing the level of Openness in the city?	Very Poor	Poor	Fair	Good	Very Good
Rating in Round 1	0	1	2	15	9
Rating in Round 2	0	0	3	16	8
Absolute Difference in Rating	0	1	1	1	1
Net person change	2	% Change < 15% - Between round consensus has stabilized. No further rounds are needed.			
Number of Participants	27				
% Change	7.4				

TABLE 15: BETWEEN ROUND STABILITY ANALYSIS FOR THE FREEDOM OF EXPRESSION CONSTRUCT

Q19. Taken together as a group, in your view, how adequately does the revised set of five indicators serve as proxies for assessing Freedom of Expression in the city?	Very Poor	Poor	Fair	Good	Very Good
Rating in Round 1	0	1	0	12	14
Rating in Round 2	0	0	3	12	12
Number Selecting Rating	0	1	3	0	2
Net person change	3	% Change < 15% - Between round consensus has stabilized. No further rounds are needed.			
Number of Participants	27				
% Change	11.1				

TABLE 16: BETWEEN ROUND STABILITY ANALYSIS FOR THE CULTURAL AND LINGUISTIC DIVERSITY CONSTRUCT

<i>Q24. Taken together as a group, in your view, how adequately does the revised indicator set serve as proxies for assessing the Cultural & Linguistic Diversity of the city?</i>	Very Poor	Poor	Fair	Good	Very Good
Rating in Round 1	0	1	5	14	7
Rating in Round 2	0	1	4	16	6
Absolute Difference in Rating	0	0	1	2	1
Net person change	2	% Change < 15% - Between round consensus has stabilized. No further rounds are needed.			
Number of Participants	27				
% Change	7.4				

TABLE 17: BETWEEN ROUND STABILITY ANALYSIS FOR THE EDUCATION FOR ALL CONSTRUCT

<i>Q27. Taken together as a group, in your view, how adequately does the revised set of indicators serve as proxies for assessing the Education for All construct within the city?</i>	Very Poor	Poor	Fair	Good	Very Good
Rating in Round 1	0	2	5	10	10
Rating in Round 2	0	0	3	12	12
Absolute Difference in Rating	0	2	2	2	2
Net person change	4	% Change < 15% - Between round consensus has marginally stabilized.			
Number of Participants	27				
% Change	14.8				

Results from Round 3 of the Delphi Study

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ACKNOWLEDGEMENTS

I would like to express my sincere appreciation to all panelists for their inputs to Round 3. I greatly value the time and effort you have contributed to this endeavor. For this, I am truly grateful!

Your participation in this Delphi panel along with my earlier literature reviews and field work undertaken in Addis Ababa, Ethiopia and Bangkok, Thailand has been instrumental in helping me to answer the three research questions that I have been investigating as part of this study:

- RQ1: How can UNESCO's Knowledge societies' concept be operationalized to address the strategic challenges (UN's post-2015 development goals) that cities in the developing world face?
- RQ2: What insights does the knowledge city maturity model provide?
- RQ3: How relevant is the knowledge city maturity model to the context in which the policy-makers and experts of selected cities operate and to what extent can it inform the development of action plans?

The process of receiving, reflecting and seeking to take into account your proposals and comments has been an intellectually engaging process. Your comments have also challenged and enlarged my thinking. The websites, blogs, books and project initiatives you have shared with me have also served to shape my research.

In due course I will be sharing the outcomes of this research and subsequent papers with those who have expressed interest in receiving them. I have also developed an Android-based application and begun testing its use for data collection. A website with the resources developed and information on cities of the developing world is underway.

I am deeply indebted to all panelists for your time, effort and candor.

Once again, I thank each and every one of you very much!

Paul ☺

DELPHI STUDY ROUND 3 REPORT AND FINDINGS

Summary of Findings

In Round 3 additional aspects were included in the Openness and Universal Access to Information indicator/criteria sets. The indicator/criteria sets for Equity, Universal Access to Information and the Educational for All Constructs were validated. Stability in the opinions of the panelists was achieved for the Knowledge-based Development Model. The high level of consensus as well as stability in the change of opinions indicated support and validated the logic of the model being developed.

The tension between the academic/theoretical validity and the ability of the Knowledge-based Development Model to be understood by a general audience, was an aspect that continued to be raised by panelists. One effect of this ongoing debate was a drop in the level of consensus around the model between Round 2 and 3. Taking this into account, as well as comments from panelist, the researcher has engaged with several communication specialists to address this challenge. **The opinion of panelists on this approach will be greatly appreciated and sought through a very short and abbreviated follow-up questionnaire.**

Another tension has been that of the general city and the city-specific context. Every city is unique. The social, political, economic, environmental, historical and other contextual factors in each city will influence what is considered relevant, a priority and significant.

The goal of this model is not to rank cities, rather to help each city develop and identify what is best for it and to capture its progress over time towards a set of goals that it has agreed and defined. The utility of each indicator/criteria and the model has to be assessed in light of the local context in order to understand what is meaningful, significant and actionable. This approach is coherent with the Design Science Research ontology, epistemology and values which guides this study.

The indicator and criteria framework developed and based on the UNESCO framework is a normative one. It therefore becomes important to assess whether what is observed is in line with the assumptions of these norms, and to interrogate their validity in the specific city context. This point and its “idealism” has also been raised by several panelists.

The global expert panel has provided inter-disciplinary expertise and familiarity with a range of social, economic, cultural and environmental situations. This has enabled a set of core indicators/criteria, initially identified from the literature to be further developed. It is expected that these indicators/criteria should provide a relatively robust set of proxies for investigating the constructs in the model across a range of city settings. Future field work is expected to provide clarity around this.

The foregoing points regarding the relevance of context also indicate that prior to any large scale deployment of the model a small scale pilot should be undertaken to “calibrate” the model. As the model relies on semi-structured interviews, the core indicators provide a common point for exploration with interviewees and stakeholder groups. While this can be

seen as providing a degree of comparability, it is the interviewees and stakeholders - not the model - that provide the necessary context. Grounding in the specific city context should direct the researcher to what is meaningful and where purposeful action can emerge or be directed.

In Round 3, a total of 35 panelists participated as compared to 40 in Round 2 and 42 in Round 1. This reflects a small ongoing decline in the number of participating experts. However, the percentage of panelists completing the survey has continued to increase throughout the study. Also while in Round 2, 85% of the panelists indicated they had participated in the first round, 94% of panelists in Round 3 reported participation in an earlier round. In practice, between round attrition rates of as much as 60% have been observed in Delphi studies (Linstone & Turoff, 2002). The foregoing values therefore point to a high level of interest, engagement and continuity amongst panelists. This raises confidence in the findings and conclusions that can be drawn from this study.

With the validation of all constructs in the model completed, the researcher was able to develop weighting factors based on the rankings of the indicators/criteria present in the model. Future work may seek to conduct a similar exercise for the model constructs. Again, in light of the role of context, the relevance and appropriateness of weightings across cities should be investigated.

A simulated KSWOT – Policy dialogue was conducted in lieu of an actual field application. Delphi panelists having experience in the developing world city context were invited to participate. 62% of the Round 3 panelists participated in this exercise. This simulation drew on and then collated the experiences from a city in the developing world that each participant knew best. This synthetic exercise served to highlight the variety of challenges that appear in across developing city contexts. Furthermore, it served to demonstrate how a group of actors drawn from various stakeholder groups and disciplinary perspectives could use the methodology proposed as part of this study to identify opportunities, challenges and arrive at a portfolio of action for addressing a set of challenges of concern to the city. In a practical application, the findings from surveys conducted using the model would complement this KSWOT-Policy dialogue by providing a baseline and serving to inform and deepen the analysis that could be undertaken. Longitudinal follow-up surveys could assist the city to benchmark its progress.

It is expected that the tools developed in this study will be put to use in the near future.

I was especially gratified to learn from participants that they had found participation in this study to be useful and beneficial. More than 90% of panelists took time to share their thoughts and respond to this optional question. I trust that I may be able to work with you in the future to extend and improve this work.

Overview of the Delphi Study and its Purpose

This study considers knowledge maturity to be a society's ability to create conditions that stimulate, harness and direct the potential of its members towards creating and leveraging tangible and intangible assets in order to realize the full potential of the society's members, to address societal challenges and realize a shared societal goal and vision. The study is focused on primate cities of selected developing countries in Asia and Africa. As explained in the background paper, the study hypothesizes that knowledge maturity is influenced by nine constructs - human rights and needs, pluralism, equity, inclusion, openness, freedom of expression, universal access to information, cultural and linguistic diversity and education for all - identified in UNESCO's Knowledge Societies Conceptual Framework.

This Delphi study therefore seeks primarily to:

- Identify a set of indicators/criteria that enable each construct derived from the UNESCO Knowledge Societies Conceptual Framework that contribute to knowledge maturity to be qualitatively assessed,
- Develop ranking and weighting factors for the indicators and criteria in the model and
- Validate a proposed knowledge-based development model.

The final knowledge-based development model will assess each construct by evaluating the selected indicators/criteria using a four-level maturity scale that takes into account people, processes as well as outcomes. It is expected that this validated model will provide a policy tool for developing understanding of the city and its actors, context and concerns and allow its knowledge maturity to be assessed. This baseline will enable, the identification of follow-up steps for possible enhancement and improvement of its knowledge maturity. When operationalized the model will by necessity consider both quantitative and qualitative aspects. It will collect the views of societal stakeholders so as to develop a rich understanding of the aspirations, values, concerns, and interaction dynamics amongst differing stakeholder groups as well as other contextual factors.

The indicators/criteria and the model provide a starting point for exploration, discussion and adaptation. They are intended to help policy-makers to identify and advance feasible actions as well as to prioritize efforts to address societal challenges and goal within their specific context. While the model can support the exchange of experiences and provide insight into policy options, it is not intended to serve as a ranking system. Each city must adapt the model to its context and direct it so as to maximize its strengths and mitigate its challenges.

Participation in Round 3 of the Delphi Study

The third round of the Delphi study was launched on August 12, 2015 with a planned closing date of September 2, 2015. 35 panelists participated in the third round as compared to 40 in round two and 42 in round one. These numbers reflected a small ongoing, longitudinal decline in the number of experts participating in the study. At the same time however, the percentage of panelists completing the survey has increased throughout the study. In round one 76% of panelists completed the survey, this increased to 95% in round two and 97% in round three.

In round 2, 85% of panelists indicated they had participated in the first round, with 94% of panelists in round 3 reporting that they had participated in an earlier round. Further analysis revealed that 74% of round 3 panelists also participated in round 2. A core group of 19 persons participated in all three rounds of the Delphi panel.

From the literature, between-round attrition rates of the order of 60% had been anticipated (Day & Bobeva, 2004; Linstone & Turoff, 2002). Given the size of the pre-qualified sample of experts the number of participants expected in each of the three rounds was 26, 16 and 10. Participation in the survey therefore exceeded expectations and provided greater confidence in the conclusions drawn from this study.

Assessing Consensus Amongst Panelists

As in the first two rounds, both qualitative and quantitative approaches were used to assess consensus amongst panelists.

Qualitative Assessment

The qualitative assessment involved the review and thematic grouping of comments. On this basis, a general sense of the level of satisfaction with the revisions made to the model and indicator sets could be identified. Comments also helped to identify possible improvements and directions for future research activities. This section is concerned only with the evaluation of the knowledge-based development model and criteria / indicator sets for the Equity, Universal Access to Information and Educational for All constructs reviewed in round 3.

Findings from the qualitative assessment of consensus

Panelists were invited to respond to six optional open-ended questions concerning the model and the three criteria/indicator sets. On average, each optional questions received 11 responses. The highest number of responses, 15, were received for Questions 6 and 8 which respectively addressed the adequacy of the model and the inclusion of aged and retired persons into the group of vulnerable persons considered under the Equity construct. In contrast, the lowest number of response received, 7, occurred for Question 10 which invited comments on the revised set of equity indicators / criteria. The high level of voluntary responses as well as the high completion rate points to the continued interest and engagement of panelists.

Open-ended responses to the optional questions, served to:

- Signal concerns that the revised model was becoming more complex and was at risk of becoming too academic and less accessible to policy-makers and “lay” users;
- Highlight calls for explicit reference to concepts likes “wisdom”, “war & peace”, “trade & exchange”, “change & development” that some panelists saw as critical;
- Re-emphasized the importance of disaggregation in assessing and considering model criteria / indicators. For example, while aging could increase vulnerability, the actual level of vulnerability was likely more influenced by socio-economic status factors;
- Highlight complementary criteria/indicators that could enhance the model;
- Served to emphasize the need for positive and proactive steps to ensure the respect for human rights and other international norms;

- Signal potential measurement difficulties that could arise in the application of the model and the need to reflect on these aspects, particularly with a view to avoid “gaming” and inappropriate use of measures to manipulate perceptions;
- Provide suggestions for clarifying and enhancing the depiction of the interdependencies and relationships in the model, by improving the terminology;

Knowledge-based Development Model

Figure 1 presents the opinions of panelists on the Knowledge-based Development Model with most panelists expressing support for the model. Qualitative comments from panelists provide insights for understanding their opinions.

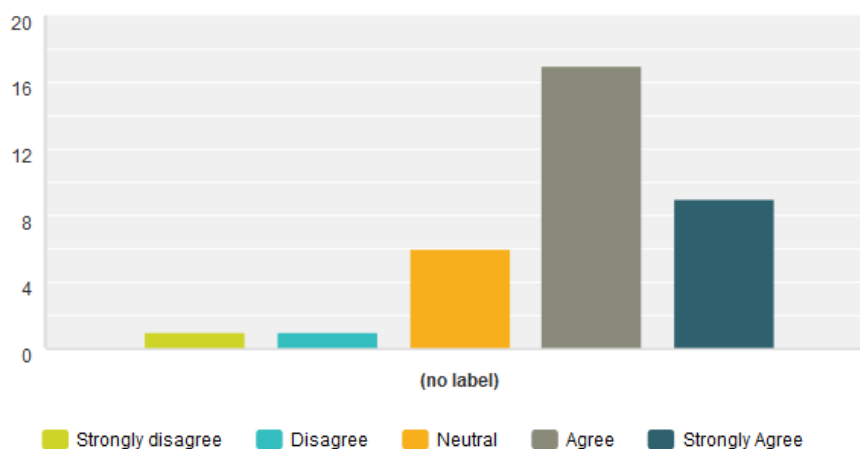


FIGURE 1: ASSESSMENT OF THE REVISED KNOWLEDGE-BASED DEVELOPMENT MODEL

- *I think this schema should be simplified*
- *The issues and relationships are accurate, but the model is becoming a bit complicated for non-academic stakeholders to easily understand*
- *The diagram captures key issues, but has now become very complex and difficult to follow. More importantly as it has become more complex, it has become subject to much greater interpretation by the reader/viewer, which is potentially problematic. I would suggest that the author consider simplifying the diagram and then using text to elucidate key complexities flowing from the diagram.*
- *I believe there is merit in viewing “Wisdom” as an outcome of “Knowledge Maturity”.*
- *I am a bit concerned that the model mainly supports UNESCO’s views formulated within the organization’s mandate, and not other factors leading to the development of assets and achievement of societal goals e.g. war vs peace, trade & exchange vs isolation, change and development vs stagnation/conservatism.*

Researcher’s comments: The comments received suggest that while the updated version of the model has become better able to capture the inter-relationships and dependencies, this is occurring at the expense of the model’s clarity and simplicity.

Intuitively I support the view that knowledge maturity is linked to wisdom. A cursory review of the literature recommended by panelists as well as others working in this field (Bennet et al., 2015; Goede, 2011; Liew, 2013; Sternberg, 1990) points to a range of perspectives and approaches around wisdom but limited consensus amongst academics. Goede (2011) for example distinguishes three levels of wisdom at the personal, corporate and societal level which he designates as wisdom, corporate responsibility and sustainable development. Bennet et al. (2015) see spirituality as an important element in cultivating wisdom while others like Rooney & McKenna (2005) as cited by Goede (2011), take a secular view on wisdom. The concept of wisdom has not been explored as part of this research and is therefore beyond the scope of this study. From the perspective of Goede's (2011), the model developed in this study, with its emphasis on sustainable development, provides a departure point for exploring the concept of wisdom. This area is therefore flagged for future research.

As pointed out in the background paper, the objective of this study is to operationalize UNESCO's Knowledge Societies Conceptual Framework. *A priori*, this has implied certain values and choices for framing what the model would cover. The model is necessarily focused on assessing the conditions for peace framed in a context that prioritizes human rights and values principles such as equity, inclusion, non-discrimination, and pluralism. Aspects such as conditions for participation in economic life by vulnerable groups, intellectual property, the existence and adequacy of transportation networks are nevertheless captured in various constructs such as Openness, Pluralism and Education for All. These constructs have important implications for a city's ability to participate in the global flows of goods and services. In a similar way, the constructs of Openness, Pluralism and Education for All are also relevant to questions of change, development and conservatism.

Equity Construct

Figure 2 visualizes the opinions of panelists regarding the inclusion of "Aged and retired" as one of the vulnerable groups considered under the Equity construct in Round 3 and indicates overwhelming support for their inclusion. The qualitative comments below provide insights into the reasoning and concerns that motivate these opinions.

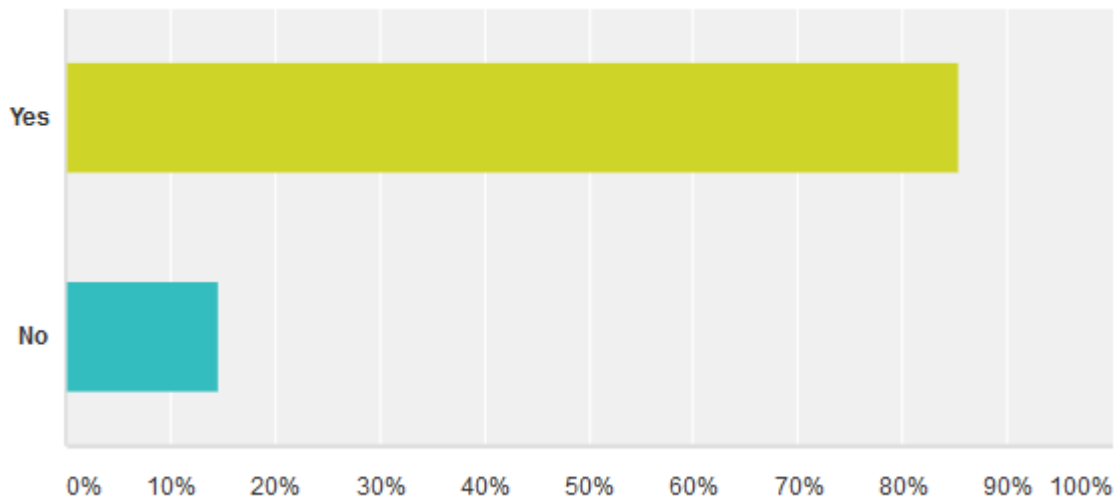


FIGURE 2: SHOULD THE “THE AGED AND RETIRED” BE INCLUDED IN THE VULNERABLE GROUPS CONSIDERED?

Do you agree with the proposal to include the aged and retired into the group of vulnerable persons? Please provide any additional comments you may have on this construct

- *The percentage of people in this group is increasing globally.*
- *Vulnerable groups may be different in cities depending on context.*
- *Perhaps, elderly and retired people should constitute a separate category given their specificity. In principal, they are not "marginalized", since in general elderly and retired people have had some active participation in the society.*
- *They also are not "excluded" from opportunities*
- *I agree that aged and retired can be a group of vulnerable person. But (in the developed world) the aged become vulnerable person, half of the society will be vulnerable. There are a lot of problems and challenges in the life of aged (health, loneliness, money etc.) but there are solutions for them, a lot of ICT tools, too. Secondly, the aged and retired is a too large and general group. It must be differentiated, any highlighted some sub-groups, for example aged with poor conditions, aged without family, aged with logistical problems what can be solved etc.*
- *Age is not a factor of vulnerability. Many retired people begin a new life after the first part of their life. A part of them leave their own country to go abroad in order to continue to work, as young people!*
- *In the near future the target group ' aged and retired' will become increasingly important in many countries (Europe, Japan), and their addressing their anticipated concentration in Knowledge cities will be a real issue for societal prosperity.*

Researcher's comments: The issue of aging and a growing aging population is certainly an important issue for all societies and for rapidly urbanizing cities in particular. The World Health Organization has been undertaking a programme under the rubric of “Age-friendly Cities” specifically addressing this challenge. As pointed out by an overwhelming majority of

respondents Age and retirement can lead to enhanced vulnerability, however the actual level of vulnerability can vary tremendously based on contextual factors. The context-specific aspects – socioeconomic grouping, gender, ethnicity and other factors - will be taken into account during field work.

Taken together as a group, in your view, how adequately does the revised set of five (5) indicators serve as proxies for assessing the level of Equity in the city? Please provide any comments you may have on this construct.

Figure 3 visualizes panelists' opinions regarding the adequacy of the revised set of indicators for this construct and indicates a high level of support. Qualitative comments that illustrate the panelists' opinions follows.

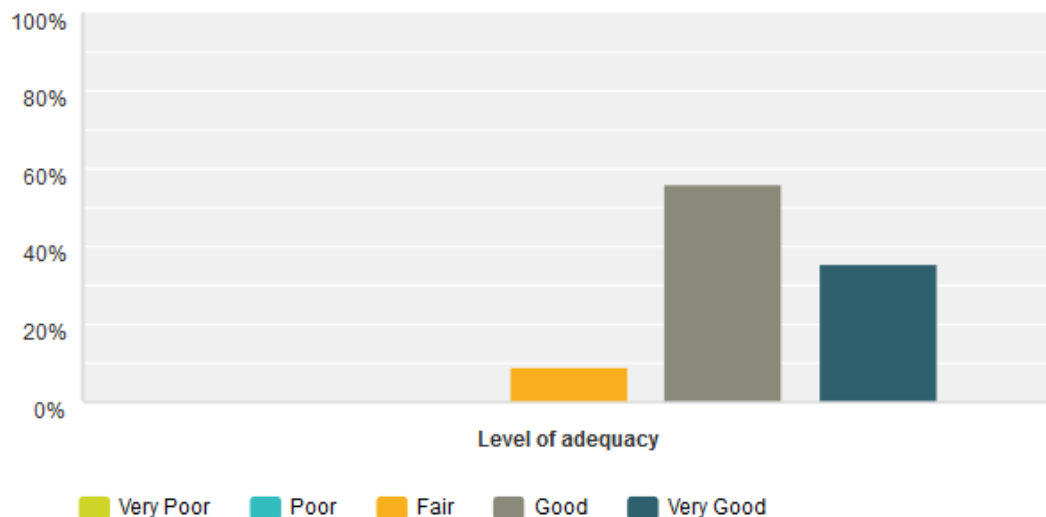


Figure 3: Level of adequacy of Indicators/criteria for the equity construct

- *Equity on reproductive services [if] well managed [will] contribute to a healthy society.*
- *I find these 5 indicators very good as this includes the equal access to the basic social services for all.*
- *I think more could be done but it might make the model too complex or bi-furcated.*
- *There is considerable overlap between the concepts of "inclusion" and "equity" as you use them. If I understand correctly, the main difference is that inclusion considers especially marginalized groups (outliers) and equity the population as a whole. This is OK, but perhaps some more clarification in the explanations would be useful?*

Researcher's comments: As mentioned interdependencies exist between the constructs presented in the model. These constructs are distinct as indicated in the definitions¹² included in the footnotes for your convenience. Both principles apply to the entire population. From a measurement perspective, by focusing on those who are most vulnerable and therefore least able to protect themselves this gives us a better way of understanding to what extent inclusion and equity are principles that are valued and respected in a given society or city.

Openness Construct

Do you agree with the proposal to include an indicator/criterion for intellectual property rights under this construct? Please provide any additional comments you may have on this construct.

Figure 4 provides a graphical depiction of panelists' opinions on the inclusion of an indicator /criteria for intellectual property rights under the openness construct. Comments illustrating the motivations and concerns that informed panelists' opinions follow.

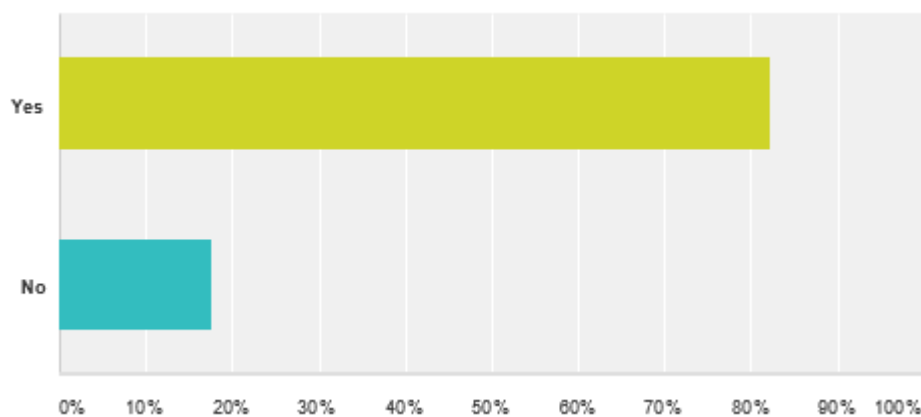


FIGURE 4: SHOULD INTELLECTUAL PROPERTY RIGHTS (IPR) BE CONSIDERED IN THE INDICATORS/CRITERIA UNDER THE OPENNESS CONSTRUCT?

- *Very important*
- *But the fact that not all play by the rules needs to be considered. Intellectual property rights need to be nuanced with fairness and recognition for universality of human ingenuity.*
- *As long as the IPR issues are equitable and considers the creators' right, this gives a good indicator for knowledgeable society.*
- *What are examples of private interest in IPR of a knowledge city?*
- *IPR is a very important topic, since it can contribute both to stimulate info creation, but can also be an obstacle to access to information and social technology use.*

¹ Inclusion - The ability of an individual to fully exercise and claim the social, cultural, political and other rights afforded to them under the international and national laws.

² Equity - The belief that people's basic needs should be met consistently and adequately, that burdens and rewards should not be spread too unevenly across communities, and that policy should be applied impartially, fairly and justly to achieve these goals.

- *Although I agree in principle, there is a strong case to be made for protection of IPR having predominantly functioned to protect vested social interests and thus contribute to inequality. Thus, I think this is too complex an issue to be included as an indicator.*

Researcher's comments: An overwhelming majority of participants saw IPR as an important aspect to be considered in assessing the Openness construct. The challenge expressed by many was how to balance the rights of creators and owners of IPR to extract commercial and other forms of value, against the potential public benefit of freer access and dissemination of information and knowledge. Currently there are a number of business models, licensing regimes and other approaches to support communal collaboration and differentiated terms of use, such as through Creative Commons licensing³. This is an area of rapid evolution and innovation.

Universal Access to Information Construct

Taken together as a group, in your view, how adequately does the revised set of seven (7) criteria / indicators serve as proxies for assessing the Universal Access to Information Construct in the city? Please provide your comments on this construct.

Figure 5 provides a graphical depiction of the distribution of panelists' opinions regarding the Universal Access to Information construct. This indicates satisfaction by the majority of panelists. Comments that illustrate their motivations and concerns follow.

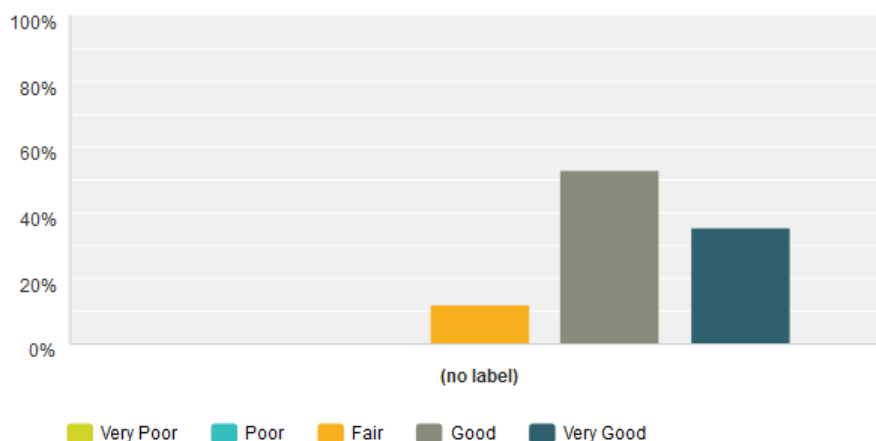


FIGURE 5: LEVEL OF ADEQUACY OF THE SET OF 7 INDICATORS FOR ASSESSING THE UNIVERSAL ACCESS TO INFORMATION CONSTRUCT

- *I said very good because it takes well into consideration the affordability, accessibility and safety in line with the socio-cultural infrastructure environment or milieu.*
- *It would be complete if print media is considered*

³Creative Commons helps you share your knowledge and creativity with the world
<http://creativecommons.org/>

- *Community based communication services such as community radio could be included under (f)*
- *Somewhere in this model I miss the explicit concept of "literacy". This includes traditional literacy (reading, writing, arithmetic), but also digital literacy, health literacy and civics (basic literacy for citizens). Obviously (b) addresses digital literacy, as does (d). If digital literacy is explicitly addressed in section 8, shouldn't other literacies be addressed here? What about basic reading and writing as a prerequisite to all the others? What about civics literacy as more important than (e)? Is public transportation access more important than health literacy?*
- *You are still stressing way too much access to ICT as a measure of access to information and knowledge. I would put indicator f) in first place. Indicator e) does not belong here. You could include it in "equity" if you wish.*

Researcher's comments: The majority (87.5%) of panelists expressed satisfaction with the revised set of indicators. Panelists also provided suggestions for making further improvements which are taken onboard. It should be pointed out that the order of the indicators does not indicate the relative priority or importance given to any criteria/indicator listed.

Some of the aspects of literacies emphasized such as civics, reading and writing are captured within the Education for All construct. As mentioned, earlier, the various criteria / indicators in the model will be assessed qualitatively, this is based on the fact that quantitative data in the cities where the model is intended to be used is often not readily available. The rationale for the inclusion of transportation under this construct – as a means to support human interaction, communication and transfer of services and goods that embed information or knowledge - has also been explained in the Round 2 report.

ICT are an important means of transferring information and supporting knowledge mediation, especially over distances. Given the key role that primate cities serve as connection points both within their nations and with other nations, ICT is highly relevant. Other means of information and knowledge mediation such as radio, paper-based forms, face to face exchanges, community gatherings – supported by transportation links - amongst others are also highly relevant. Such aspects are captured by indicators /criteria “f” and “g” as follows:

- f) Presence of local and regional knowledge clusters (including communities of practice, libraries, archives and universities)
- g) Support for traditional/local knowledge (preservation, valorization and mobilization)

Education for All Construct

In light of the above clarifications, how adequately does the revised set of indicators/criteria serve as proxies for assessing the Education for All construct within the city? Please provide any comments you may have on this construct.

Figure 6 provides a visualization panelists' opinions on the Education for All construct. Overall there is a high level of satisfaction with a minority of dissenting viewpoints. Comments that illustrate their motivations and concerns follow.

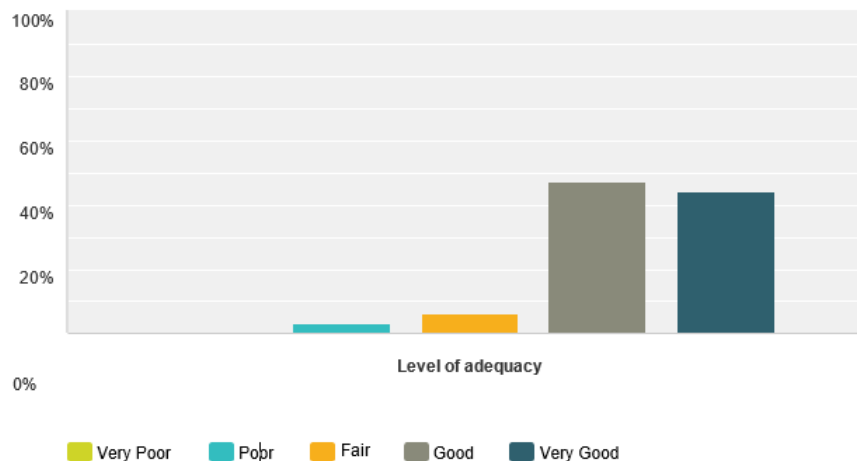


FIGURE 6: LEVEL OF ADEQUACY OF THE INDICATORS FOR ASSESSING THE EDUCATION FOR ALL CONSTRUCT

- *The revised set of indicators have so far, been extremely well captured*
- *See comments in section 7. Education also should address health-literacy, civics-literacy, and more. Can we assume that all citizens in knowledge cities are actually reading/writing/arithmetic literate? Recent studies indicate that we can't.*
- *Replace "informal structures" by "informal education". "Civic spaces" are a totally different factor. They belong more under openness or equity than here.*
- *Opportunities for Lifelong Learning*
- *I find these indicators very good as long as citizenships are involved in the policies processes and procedures for affordable education for all at the all social level.*

Researcher's comments: The role of civic spaces as a low cost and accessible venue for a range of learning opportunities, including language learning, entrepreneurship and others has been documented by various researcher and institutions including the Council of Europe⁴ and is an area of emerging research interest amongst scholars in the field of educational innovation⁵. In societies as the role and significance of knowledge-based development becomes appreciated, I think increasingly there will be more emphasis on empowering learners to be able to identify what they need to learn and to have the skills to effectively direct and learn what they wish. From this perspective, having the literacy to be able to acquire new literacies will likely become more important than having a specific literacy such as financial or health literacy. Similarly, I think idea of life-long learning will be seen to be as significant and essential as going to primary school.

⁴ <https://www.coe.int/t/dg4/cultureheritage/culture/Cities/Newsletter/newsletter19/InterCentres.pdf>

⁵ <http://www.learningspaces.edu.au/docs/learningspaces-literature-review.pdf>

Quantitative Assessment

Assessment of In and Between Round Consensus

As in the previous round, a quantitative analysis of the panel's opinion of the model and indicator sets was undertaken (Holey et al., 2007; Linstone & Turoff, 1975). In addition to the within round trends, attention was given to the change in the opinions of the panel between rounds. A comparison of the changes in opinion as well as the evolution of the indicator sets was investigated. Non-parametric testing of the stability of group opinions between rounds was also undertaken (Linstone & Turoff, 1975). The following analyses were conducted: a) Assessment of the percentage of majority opinions, b) Average percentage of majority of opinions, c) Assessment of median and interquartile ranges and d) Test of between round stability of opinion. Tables 1 to 5 present the results obtained as well as the evolution of consensus across the three rounds.

For between round comparisons of shifts in opinions, the analysis considered successive rounds to be statistically dependent. In line with this viewpoint, the between rounds comparison utilized a reduced dataset based on the subset of 26 experts who participated in both rounds.

Percentage of Majority Opinions

More than 51% of panelists participating in the third round of the Delphi study expressed agreement with the revisions made to the indicator sets and the knowledge-based development model. Levels of agreement across the three model constructs (not including the knowledge-based development model) under study ranged from 75.0 % to 90.6%. This indicates a smaller range in opinions regarding the constructs under study as compared to Round 1 (levels of agreement ranged from 56.3 % to 87.9 %) but a larger range than was seen in Round 2 (83.8% to 94.7%).

Consensus around the proposed knowledge-based development model decreased to 75.0% in this round from the Round 2 value of 84.2%. While 30% higher than the consensus in Round 1 (57.6%), several panelists expressed the view that the model was now becoming too complex.

For the Education for All construct, consensus in Round 3, 90.6% was higher than achieved in Round 2 (86.5%). However in the case of the knowledge-based development model a fall in consensus (75.0%) was observed as compared to Round 2 (84.2%). The level of consensus was still some 30% higher than the score achieved in Round 1 (57.6%).

Average Percentage of Majority of Opinions (APMO)

The calculation of the Average percentage of majority of opinions (APMO) indicated a value of 88.2% for consensus. On the basis of the APMO, within round consensus was achieved with respect to the indicators/ criteria proposed for the Equity construct (90.6%), the Education for All construct (90.6%). Universal Access to Information received a score of 87.5%, just shy of the APMO threshold. Consensus on the Knowledge-based development model (75.0%) was below the APMO value.

EQUATION 1: AVERAGE PERCENTAGE OF MAJORITY OPINIONS (COTTAM ET AL., 2004)

$$APMO = \frac{\text{Majority Agreements} + \text{Majority Disagreements}}{S \text{ opinions expressed}}$$

$$APMO = \frac{110 + 3}{128} = 0.883; 88.3 \%$$

The APMO value reflects an overall trend of increasing consensus amongst panels through the study with values increasing from 76.7% to 87.9% and finally to 88.2% across each round from the first to third respectively. Table 5 contains the APMO values for Rounds 1 through 3.

Assessment of Median and Interquartile Ranges and Convergence of Group Opinion

In light of the overall trend in increased APMO consensus observed, compared to earlier rounds, further exploration with Median and Interquartile ranges was carried out for the Universal Access to Information construct and the Proposed Knowledge-based Development Model. Results of the analysis are presented in Table 1 and Table 2 for the Universal Access to Information construct and the Proposed Knowledge-based Development Model, respectively.

The Likert-scale questions used in the study can be considered to represent ordinal or interval scales, consequently the median and inter-quartile range are appropriate and valid statistical measures of central tendency and dispersion. The median provides insights into the “average” level of consensus while the interquartile range provides insights into the divergence of perspectives amongst the panelists (Gracht, 2012; Murphy et al., 1998). For items measured on a 5-point Likert Scale an interquartile range of 1 signifies consensus (Gracht, 2012; Raskin, 1994; Rayens & Hahn, 2000).

For the Universal Access to Information construct, while the median remained at 4 there was a shift in the upper quartile (Q3) from a value of 4 to 5, and a shift in the lower quartile (Q1) from 3 to 4 indicating increased consensus and satisfaction with the indicator /criteria set. The interquartile range of 1 meets the consensus test and given the threshold APMO consensus value (87.5%) achieved on this construct no further tests were felt to be necessary. Applying Equation 2 yields a Convergence of Group Opinion value of “o” within the range $0 \leq CGI \leq 1$. These results are presented in Table 1 and Equation 2 respectively.

TABLE 1: INTERQUARTILE RANGES AND MEDIANS FOR THE UNIVERSAL ACCESS TO INFORMATION CONSTRUCT

Universal Access to Information		
	Round 3	Round 1
Median	4	4
Q3	5	4
Q1	4	3
Interquartile Range (Q3-Q1)	1	1

EQUATION 2: TEST FOR CONVERGENCE OF OPINION USING INTERQUARTILE RANGES

$$CG_i = \frac{(IQR)_{1i} - (IQR)_{2i}}{(IQR)_{1i}}$$

Convergence of Group opinions for statement i = CG_i
 $(IQR)_{1i}$ = interquartile range in round 1 for statement i
 $(IQR)_{2i}$ = interquartile range in round 2 for statement i

$$0 \leq CG_i \leq 1$$

$$= (1 - 1)/1 = 0$$

For the Knowledge-based development model, Upper (Q3) and lower (Q1) quartiles of consensus converged and remained coincidental at a level of 4, (corresponding to an assessment of “Good”) across both rounds 2 and 3.

TABLE 2: INTERQUARTILE RANGES AND MEDIANS FOR OPINIONS ON THE KNOWLEDGE-BASED DEVELOPMENT MODEL

Knowledge-based Development Model			
	Round 1	Round 2	Round 3
Median	4	4	4
Q3	4	4	4
Q1	3	4	4
Interquartile Range (Q3-Q1)	1	0	0

Consequently, an interquartile range of 0 was attained.

Applying Equation 2 yields a Convergence of Group Opinion value of “0” within the range $0 \leq CG_i \leq 1$

Test of Between Round Stability of Opinion

The between round stability of opinion provides an assessment of changes in the panelists’ vote distribution curve over successive rounds (Linstone & Turoff, 1975). During any Delphi study it is expected that the group consensus will shift from round to round. Where these shifts

are large, this indicates low stability. A between round oscillation within a 15% +/- range indicates between round stability in the panel's opinion and a convergence of opinions.

Although meeting the convergence tests based on assessments of inter-quartile ranges and medians, in light of the low APMO value (75.0%) between round stability of opinions for the knowledge-based model was investigated.

Table 4 presents the between round stability analysis of opinions for the knowledge-based development model. This analysis is based on the responses of the 26 experts who participated in rounds 2 and 3. Despite the increased range in the views expressed in round 3 as compared to round 2, the net calculated change of 7.69% indicates stabilization of between round opinions and support for termination.

TABLE 3: STABILITY OF BETWEEN ROUND CONSENSUSES FOR THE KNOWLEDGE-BASED DEVELOPMENT MODEL

<i>From a big-picture or macro-level policy perspective how do you assess the Proposed Knowledge-based Development Model's representation of the role of knowledge in driving or supporting development?</i>	Very Poor	Poor	Fair	Good	Very Good
Rating in Round 2	0	0	4	16	6
Rating in Round 3	1	1	3	15	6
Absolute change in rating	1	1	1	1	0
Net person change	2	% change < 15% and indicates that consensus has stabilized. No further rounds needed.			
Number of participants	26				
% Change	7.69%				

Assigning Rankings and Weighting to Indicators/Criteria

The merits and limitations of assigning rankings and weightings to the criteria/indicators was discussed in earlier rounds. It is likely that these weightings would be influenced by the context of each city. As the investigation is still at a very early stage there is however no data to indicate how weightings might vary from city to city.

In each of the three rounds conducted throughout this study, panelists were invited to rank and comment on the relative importance of the various indicators / criteria selected as proxy measures of the constructs in the Knowledge-based Development Model. On this basis weightings were generated for each indicator/criteria for each construct in the model and these are presented in Table 7.

The following section illustrates the process used for allocating weightings to the indicators /criteria in this model based on the importance ranking assigned by panelists.

Illustration of how this process is applied

Some factor Alpha is determined to be the sum of three criteria / indicators, X, Y & Z.

As shown by the following equation:

$$\text{Alpha} = a_1 * X + a_2 * Y + a_3 * Z \quad (\text{Equation 3})$$

Where a_1 , a_2 and a_3 are weighting factors based that reflect the relative importance of the contributions made by X, Y and Z respectively to the value of Alpha and where

$$a_1 + a_2 + a_3 = 1 \quad (\text{Equation 4})$$

11 panelists are ask to rank three indicators / criteria X, Y & Z by their level of importance from 1 to 3, with 1 as most important and 3 as least important. On the basis of their rankings the resulting level of importance for each indicator / criteria used for assessing the construct Alpha are shown in Table 4.

At any given level we multiply the proportion of votes received by the reciprocal of the importance (n) at that level, so the factor is $1/n$.

TABLE 4: VOTES ASSIGNED TO A HYPOTHETICAL SET OF 3 CRITERIA / INDICATORS X, Y & Z FOR A GENERIC CONSTRUCT "ALPHA" BY 11 PANELISTS

Importance (n)	Indicator / Criteria			Total votes
	X	Y	Z	
1	3	6	2	11
2	5	4	2	11
3	3	1	7	11
Total votes	11	11	11	

Then we further adjust the score at each level (n) based on its importance. For the first place the adjustment factor is n/n (i.e. 1); for second place the factor is $(n-1)/n$ (i.e. $2/3$); and for third place by the factor is $(n-2)/n$ (i.e. $1/3$).

(Similarly, if there are five indicators/criteria, the factors at levels 1 to 5 would be: 1; $4/5$; $3/5$; $2/5$; $1/5$)

1. Calculate indicator / criteria scores at each level

a) Consider first place

Y - 6 people think it is most important; so it is ranked $1^{\text{st}} = 6/11 * 1/1 = 6/11$

X - 3 people think it is 2^{nd} most important; so it is ranked $2^{\text{nd}} = 3/11 * 1/2 = 3/22$

Z - 2 people think it is most important; so it is ranked $3^{\text{rd}} = 2/11 * 1/3 = 2/33$

No adjustment score is needed for first place (factor of 1).

b) Consider second place

Y - 4 people think it is most important; so it is ranked $2^{\text{nd}} = 4/11 * 1/2 = 4/22$

X – 5 people think it is most important; so it is ranked $1^{\text{st}} = 5/11 * 1 = 5/11$

Z – 2 people think it is most important; so it is ranked $3^{\text{rd}} = 2/11 * 1/3 = 2/33$

For second place we adjust each score by a factor of $2/3$ i.e. ($2/3 * 4/22$; $2/3 * 5/11$; $2/3 * 2/33$)

c) Consider third place

Y – 3 people think it is most important; so it is ranked $2^{\text{nd}} = 3/11 * 1/2 = 3/22$

X – 1 person thinks it is most important; so it is ranked $3^{\text{rd}} = 1/11 * 1/3 = 1/33$

Z – 7 people think it is most important; so it is ranked $1^{\text{st}} = 7/11 * 1/1 = 7/11$

For third place we adjust each score by a factor of $1/3$ ($1/3 * 3/22$; $1/3 * 1/33$; $1/3 * 7/11$)

2. Sum the scores for each indicator / criteria

$$Y = 6/11 + 2/3 * 4/22 + 1/3 * 3/22 = 7/11$$

$$X = 3/22 + 5/11 * 2/3 + 5/11 + 1/33 * 1/3 = 59/198$$

$$Z = 2/33 + 2/33 * 1/3 + 7/11 * 1/3 = 29/99$$

3. Assign weightings to indicator / criteria based on the relative scores

$$\text{Proportions for } Y : X : Z = 7/11 : 59/198 : 29/99 = 0.518 : 0.243 : 0.237$$

$$\text{So the value of Alpha} = 0.518 Y + 0.243 X + 0.237 Z$$

In line with the above approach, the rankings for each of the nine constructs in the model are determined. These values are presented in Table 7.

TABLE 5: LEVEL OF CONSENSUS ACHIEVED DURING THE THIRD ROUND OF THE DELPHI STUDY USING APMO METHOD (COTTAM ET AL., 2004). APMO = 88.3%

Question	No. Agreeing	% Agreeing	No. Disagreeing	% Disagreeing	No. Undecided	% Undecided	No. of Opinions	Consensus (Yes /No)
Q5. From a big-picture or macro-level policy perspective how do you assess the Proposed Knowledge-based Development Model's representation of the role of knowledge in driving or supporting development?	24	75.0	2	6.2	6	18.8	32	No
Q9. Taken together as a group, in your view, how adequately does the revised set of five (5) indicators serve as proxies for assessing the level of Equity in the city?	29	90.6	0	0	3	9.4	32	Yes
Q13. Taken together as a group, in your view, how adequately does the revised set of seven (7) indicators serve as proxies for assessing the Universal Access to Information construct in the city?	28	87.5	0	0	4	12.5	32	No
Q15. In light of the above clarifications, how adequately does the revised set of indicators/criteria serve as proxies for assessing the Education for All construct within the city?	29	90.6	1	3.1	2	6.3	32	Yes
Totals	110		3		15		128	

TABLE 6: EVOLUTION IN CONSENSUS AND NUMBER OF CONSTRUCT INDICATORS FROM ROUNDS 1 TO 3

	Round 1	APMO = 76.7%	Round 2	APMO = 87.9%	Round 3	APMO = 88.3%
Question	% Agreeing	Consensus (Yes /No)	% Agreeing	Consensus (Yes /No)	% Agreeing	Consensus (Yes /No)
<i>Does the knowledge-based development model capture the concepts presented in the UNESCO's Knowledge Societies Conceptual Framework?</i>	57.6	No	92.1	Yes	--	--
<i>From a big-picture or macro-level policy perspective does the Proposed Knowledge-based Development Model's represent the role of knowledge in driving or supporting development?</i>	57.6	No	84.2	No	75.0	YES ²
<i>Are the five indicators/criteria adequate for assessing the Human Rights and Needs climate/environment of a city?</i>	87.9	Yes	--	--	--	--
<i>Are the four indicators/criteria adequate for assessing the Pluralism climate/environment of a city?</i>	65.5	No	92.1	Yes	--	--
<i>Are the five proposed indicators/criteria adequate for assessing the level of Inclusion in the city?</i>	75.0	No	94.7	Yes	--	--
<i>Are the five proposed indicators/criteria adequate for assessing the level of Equity in the city?</i>	75.0	No	--	--	90.6	YES
<i>Are the five proposed indicators/criteria adequate for assessing the level of Openness in the city?</i>	81.3	Yes	89.2	Yes ⁶	--	--
<i>Are the five proposed indicators/criteria adequate for assessing Freedom of Expression in the city?</i>	87.5	Yes	86.5	Yes ²	--	--
<i>Are the seven proposed indicators/criteria adequate for assessing Universal Access to Information in the city?</i>	56.3	No	--	--	87.5	YES ²
<i>Are the five proposed indicators/criteria adequate for assessing the Cultural & Linguistic Diversity of the city?</i>	71.9	No	83.8	Yes ²		
<i>Are the five proposed indicators/criteria adequate for assessing the Education for All construct within the city?</i>	75.0	No	86.5	No	90.6	YES

⁶ Consensus achieved based on the assessment of interquartile range & median and between round stability of opinions

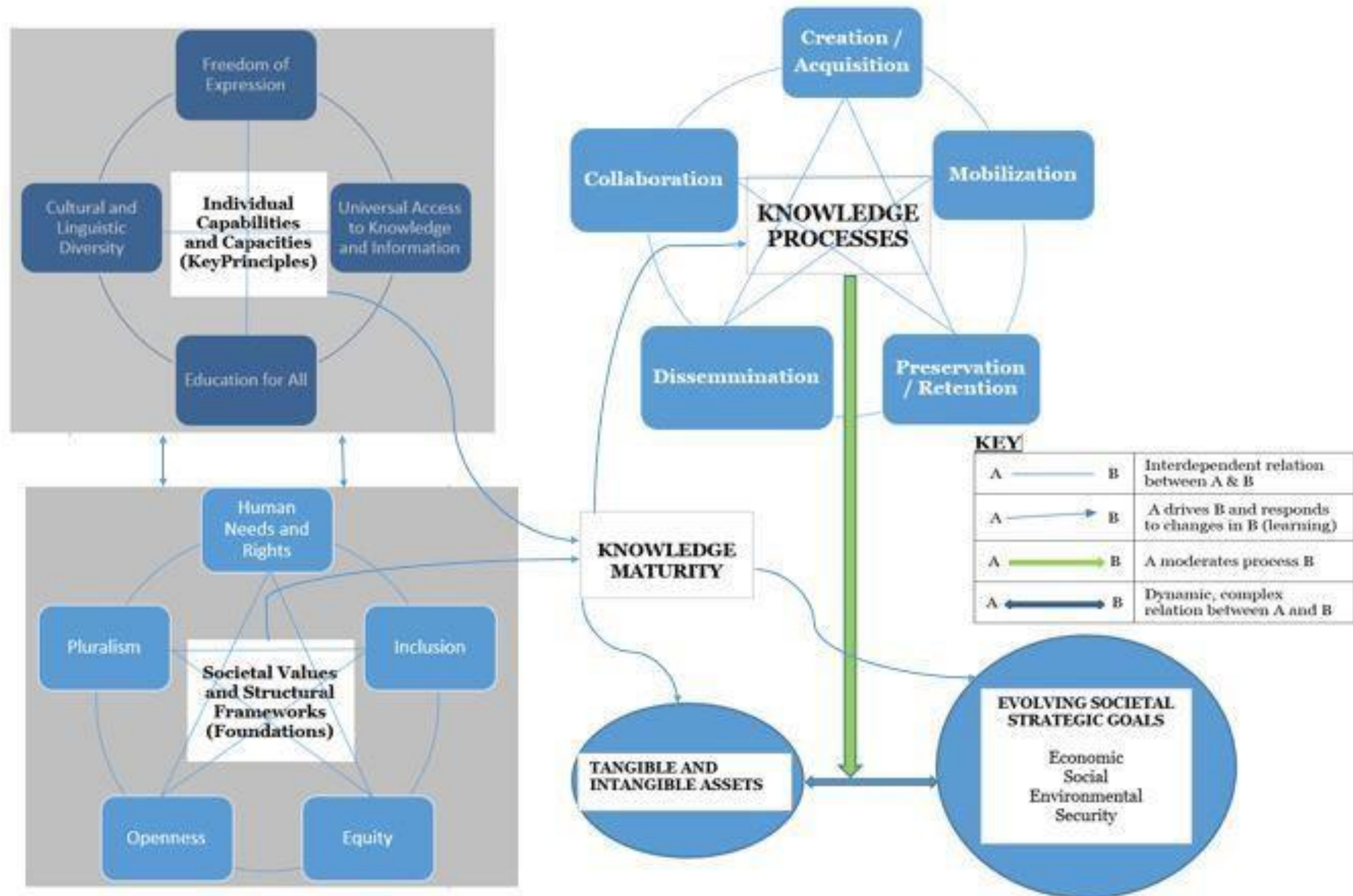


FIGURE 7: REVISED KNOWLEDGE-BASED DEVELOPMENT MODEL FOLLOWING COMMENTS RECEIVED FROM DELPHI PANELISTS IN ROUND 2

TABLE 7: KNOWLEDGE-BASED DEVELOPMENT MATURITY MODEL WITH ITS CONSTITUENT HIERARCHICAL LEVELS, CONSTRUCTS CRITERIA/INDICATORS, RANKINGS AND WEIGHTING FACTORS

KNOWLEDGE MATURITY					
Societal Values & Structural Frameworks					
Human Rights & Needs	HR1	1	0.27	Awareness	
	HR2	3	0.20	Accountability	
	HR3	4	0.18	Non-discrimination	
	HR4	2	0.20	Participation	
	HR5	5	0.15	Structural Measures	
Pluralism	PL1	1	0.29	Attitudes around disability/ethnicity/gender equality/race;	
	PL2	3	0.19	Attitudes to immigrants/migrants;	
	PL3	1	0.29	Attitudes to religious/political values/economic status/ sexual preferences or orientation	
	PL4	2	0.24	Attitudes to multi-stakeholder coalition building	
Inclusion	IN1	2	0.25	Access to safe and decent work opportunities	
	IN2	3	0.19	Level of support for the participation of vulnerable groups (women, youth, persons with disabilities, the elderly and retired) in economic activities	
	IN3	1	0.27	Access to basic social services (health care, shelter, primary and secondary education etc)	
	IN4	4	0.17	Access to civic and political space	
	IN5	5	0.12	Access to credit/training (Level of support for entrepreneurial activity)	
Equity	EQ1	1	0.26	Access to basic social services including reproductive services	
	EQ2	3	0.20	Evenness in the distribution of social costs and benefits	
	EQ3	4	0.17	Gender mainstreaming in public policies	
	EQ4	5	0.15	Adequate communication and fair access to social services and goods	
	EQ5	2	0.22	Access to property ownership (land and housing) and security of tenure	
Openness	OP1	3	0.18	Willingness to explore unconventional approaches to solving societal challenges	
	OP2	4	0.15	Promotion of open standards	
	OP3	1	0.23	Transparency in public policy/decision-making processes	
	OP4	2	0.19	Participation in public policy/decision-making processes	
	OP5	5	0.13	Protection of personal privacy and personal data	
	OP6	6	0.11	Promoting an equitable balance between public and private interests in IPR and developing the public domain.	
Individual Capabilities & Capacities (Key Principles)					
Freedom of Expression	FE1	1	0.28	Societal climate for free discussion and exchange	
	FE2	2	0.22	Diversity, sustainability and independence of media channels	
	FE3	4	0.16	Professional standards amongst media practitioners	
	FE4	3	0.18	Independence, effectiveness and transparency of public broadcasting services	
	FE5	5	0.14	Media (on/off-line) regulatory frameworks	
Universal Access to Information & Knowledge	UA1	1	0.18	Affordability, accessibility and safety of Internet services	
	UA2	2	0.17	Efforts to build human capacity to use ICT	
	UA3	3	0.16	Access to reliable and affordable power supply	
	UA4	4	0.15	Availability of on-line access to government services	
	UA5	5	0.14	Adequacy and accessibility of the public transportation system	
	UA6	6	0.10	Presence of local and regional knowledge clusters (including communities of practice, libraries, archives and universities)	
	UA7	7	0.09	Support for traditional/local knowledge (preservation, valorization and mobilization)	
Cultural & Linguistic Diversity	CL1	2	0.21	Level of cultural heritage preservation efforts	
	CL2	1	0.22	Level of capacity building in cultural expression sector	
	CL3	3	0.21	Fostering and promotion of multilingualism	
	CL4	5	0.18	Recognition and promotion of cultural industries	
	CL5	4	0.19	Presence of local culture and languages in digital media	
Education for All	ED1	1	0.28	Ability of the city to nurture its human talent (through formal school settings, informal structures and civic spaces)	
	ED2	2	0.22	Ability to attract and retain talent	
	ED3	4	0.17	Support for global citizenship education (intercultural competence)	
	ED4	3	0.18	Efforts to enhance citizens' media and information literacy (digital literacy)	
	ED5	5	0.14	Support for inter-generational transfer of traditional and local knowledge.Ability to attract and retain talent	

Modified Knowledge Strength Weakness Opportunity Threat (K-SWOT) Study and Policy “Dialogue”

Resource constraints prevented the organization of a policy dialogue and a knowledge strength weakness opportunity threat (K-SWOT) workshop (Sharma et al., 2009; Zack, 1999) in Addis Ababa. This event had been foreseen as an opportunity to provide a first application of the validated model with a group of city decision-makers. An additional set of questions was included in the Delphi study to simulate this exercise. Panelists who had lived and worked in cities of the developing world during the past 5 years were invited to participate.

The following provides an overview of the application of the policy-dialogue and K-SWOT process.

- 1) *During the last 5 years have you lived or worked in a city of a developing country in Africa or Asia? If so, please indicate the name of the city or cities.*

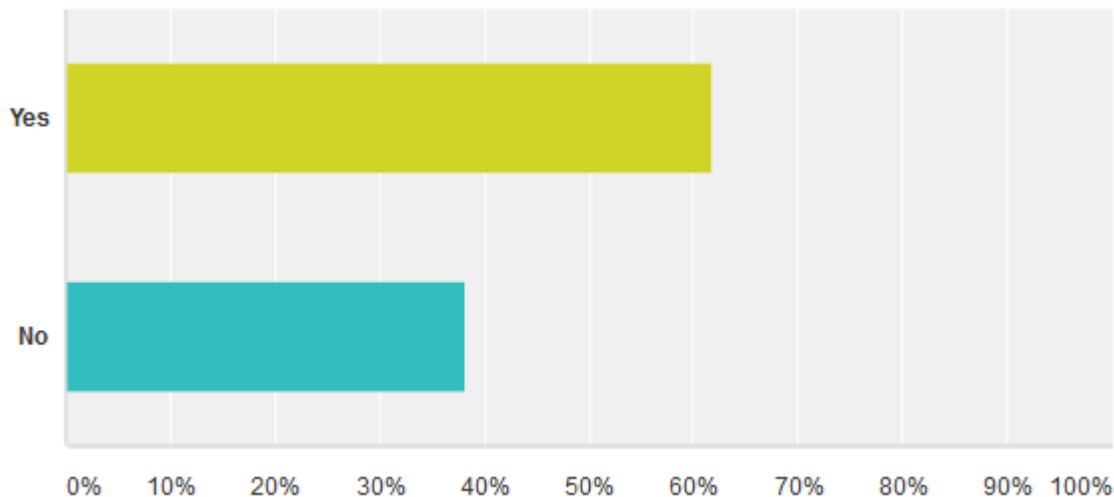


FIGURE 8: % OF PANELISTS WHO HAVE LIVED OR WORKED IN DEVELOPING COUNTRIES DURING THE LAST 5 YEARS

As can be seen in Figure 8, a majority of the panelists, 62%, have lived or worked in developing countries and accordingly were invited to participate. This enabled experiences and perspectives on cities in developing countries of Africa and Asia to be collected.

- 2) *Please indicate up to 3 urgent challenges that impact the environmental, economic or social development in the city that you have named and which you think threaten its future growth and development? If you mentioned more than one city, please focus on the one with which you are most familiar.*

Researcher’s comments: The cities most frequently mentioned by panelists as experiencing urgent urban challenges were: Accra ⁷, Ghana; Addis Ababa, Ethiopia; Bangkok, Thailand; Jakarta, Indonesia; Manila Philippines; Nairobi, Kenya and Yangon,

⁷ Accra’s primacy is reportedly being somewhat rivaled by the city of Kumasi!

Myanmar. These cities are located in developing African and Asian countries and are all primate cities. The experiences and perspectives are thus illustrative and relevant.

TABLE 8: URGENT CHALLENGES AS IDENTIFIED BY PANELIST FACING RAPIDLY URBANIZING CITIES IN THE DEVELOPING COUNTRIES OF AFRICA & ASIA

Environmental	Economic	Social
Inadequate city design and planning, Inadequate waste management, water supply/drainage, Rapid population growth, Pollution, Inadequately regulated extractive industries, unplanned squatter settlements, Inadequate infrastructure	Youth unemployment, High cost of living, Lack of innovation, Unfavorable climate for Small & Medium Enterprises, Poverty, Unemployment, Inadequate power supply, Inadequate infrastructure	Lack of political space, Low level of security, Corruption, Lack of good governance and transparency, Low social cohesion, Inadequate access to utilities (water, electricity, etc.), Inadequate public recreational and civic spaces, Inequitable wealth distribution, Child labor.

Researcher's comments: Table 8 indicates the challenges that were identified by panelists and how these were assigned to the various categories of development goals/challenges in the knowledge-based development model. It is important to recognize that these problems may be attributed to more than one category. For example, the lack of political space, while listed under the “social” column may result in the inability for citizens to discuss and resolve problems – e.g. cozy relations between politicians and mining companies result in lax or non-compliance with waste management regulations - that unchecked may develop to have environmental and economic impacts. The way that various groups, particularly decision-makers and decision-shapers seek to address the problem may therefore serve to influence what is considered to be the problem and how it should be addressed. This also points to the inter-related nature of these problems and the need for responses across a range of fronts.

3) *For the challenge that you consider to be most critical or urgent, what do you feel are its main / root causes?*

TABLE 9: ROOT CAUSES TO NAMED URBAN CHALLENGES IDENTIFIED BY PANELISTS

Roots Causes and Main Contributing Factors
Short-term outlook, Inadequately developed human capacity, External factors, Unchecked corruption and power, Inadequate planning by authorities, corruption, Inadequate collaboration amongst stakeholders, Low civic awareness, Inadequate planning, Lack of IPR, unemployment, low-level of economic diversification, poor governance, inadequate planning, inadequate infrastructure, poor resource management, lack of democratic culture, Inadequate flows of knowledge and information

Researcher's comments: The above list of challenges identified in Table 9, also serve to reinforce the importance of the three types of capacity – capacity at the level of the citizen, capacity of societal systems, particularly the governance and planning systems as well as the

capacity of public infrastructures – that are central to a city’s success and which also form part of its knowledge infrastructure. The Knowledge-based Development model only makes explicit mention of the role of transportation systems; although the relevance of this component has been contested by several panelists; as well as the availability of reliable power supply under the Universal Access to Information construct. The model’s references to access to basic services – health, education, housing etc. under the Equity and Inclusion construct provide a tangential reference to the key role of the related underlying infrastructures.

4) *For the challenge that you consider to be most critical or urgent, what do you feel are its main / root causes?*

TABLE 10: MAPPING OF ROOT CAUSES TO CONSTRUCTS IN THE KNOWLEDGE-BASED DEVELOPMENT MODEL

Individual Capabilities & Capacities	Societal Values & Structural Frameworks	Tangible & Intangible Assets	Knowledge Processes
Inadequately developed human capacity, Low civic awareness,	Inadequate planning, corruption, poor governance & resource management, lack of democratic culture, Unchecked corruption and power	low-level of economic diversification, inadequate infrastructure	Inadequate knowledge & information flows, Inadequate stakeholder collaboration a, Lack of IPR

Researcher’s comments: The various causes identified were then mapped to the various elements in the knowledge-based development model as indicated in Table 10. Again the allocations are debatable and should be debated. However, they provide a means of identifying and benchmarking where actions is needed. The results of the cross-stakeholder study conducted with the use of the knowledge-based development maturity model, can enable more focused work and benchmarking using the criteria/indicators for the nine constructs. This approach supports diagnostics as well as the formulation of interventions and action plans.

5) *For the most urgent challenge you identified, who are the key stakeholder groups that need to be involved to successfully respond to this challenge? What/how do you expect each stakeholder could contribute?*

Researcher’s comments: Respondents identified a number of key stakeholder groups with varied roles and contributions. Some were beneficiaries, others had technical, policy or other decision making roles while others could contribute specific knowledge to support the identification of feasible solutions. The more fine-grained the identification of these groups, particularly the vulnerable, the more specific the planning and implementation of responses and stakeholder involvement can be directed. While not necessarily easy, it is absolutely essential to avoid top-down solution development. Stakeholders must be involved and supported – if necessary to participate in the processes. This could be a long

process involving not only the provision of information but also addressing social and cultural norms that may inhibit their participation. Some stakeholder groups identified in the simulation are shown in Table 11, an actual in-city exercise would allow for a more specific and focused effort.

TABLE 11: SOME STAKEHOLDERS AND THEIR ROLES AND RESPONSIBILITIES AS IDENTIFIED BY RESPONDENTS

Stakeholders identified	Expected roles and contributions
<i>Local governmental actors</i>	<ul style="list-style-type: none"> * Rethink the value added of their people * Reimagine the city and provide political will/ model for realizing a more democratic society * Job creation activities * Investing in knowledge channels
<i>Civil society actors</i>	<ul style="list-style-type: none"> * Hold politicians and bureaucrats accountable * Investing in knowledge channels
<i>Academia and educational sector</i>	<ul style="list-style-type: none"> * Collaborate with private sector to address societal challenges; * Initiate "do-it-yourself" citizen projects for students e.g. stop littering * Instill civic role/values in students
<i>Private sector and industry</i>	<ul style="list-style-type: none"> * Support collaboration with academia to develop collaborative platforms and partnerships to address problems * Support investment in youth * Support college students to develop projects in their areas of study that respond to city problems and needs
<i>Various groups of individuals</i>	<ul style="list-style-type: none"> * Engage in social development rather than solely in activities for personal gain * Developing awareness /perspective that things can be different and taking ownership for bringing change * Contribute energy and ideas, participate in community projects, develop leadership capabilities * Take up role/responsibility as main stakeholders in the city
<i>Socially advantaged classes</i>	
<i>Socially disadvantaged classes</i>	
<i>Youth</i> <i>Citizens</i>	

6) Briefly describe any existing collaboration or conflict between the stakeholders you identified?

TABLE 12: FACTORS IDENTIFIED BY PANELISTS THAT SUPPORT / OPPOSE COMMON GOALS

Opposing goals/interest	Resource inequality, mistrust, profiling of minority groups, lack of stakeholder consultation by government, conflicting interests and goals (private - public), lack of trust, lack of team spirit, sectoral / stakeholder conflicts political interests, access to resources, economic interests, religious values
Shared goals:	Academic - industry collaboration to solve practical problems

Researcher's comments: The list of areas of conflict and collaboration presented in Table 12 as part of this simulation is understandably limited. It however points to the types of challenges that need to be addressed by the city in getting everyone on-board and

operationalizing the types of ideals that are captured in the constructs such as pluralism, equity, inclusion and developing a city vision. Unless these points of contention are acknowledged little real progress is likely. The ability to identify existing successful collaborations as a way of directing attention to “what could be” and therefore opening up mindsets to new possibilities and prospects for change cannot be over-emphasized.

- 7) *Are there any specific advantages (cultural, location, reputation, specific knowledge / experiences, partnerships etc.) that the city can draw on to mitigate / overcome / resolve the challenge you identified?*

Researcher’s comments: Participants were able to identify a range of attributes as well as affiliated communities, stakeholders and interested parties, sometimes in the diaspora that could be engaged to effectively marshal these resources. For the full potential of knowledge-based development to be leveraged, increasing comfort and ability to comprehend, identify and to even trade and recombine intangible assets in order to leverage the value that resides in these intangibles becomes increasingly important. Table 13 captures some of the intangibles and tangible asset of these cities that were identified by panelists. There are undoubtedly far more.

TABLE 13: FACTORS THAT CITIES CAN LEVERAGE IN ADDRESSING THEIR CHALLENGES

Tangible and Intangible Assets
Legacy of multi-cultural cohesion, openness to change, traditional values, legacy of successful public-private partnerships and government / NGOs partnerships, active and critical mass of effective civil society organization, good governance, city brand recognition/reputation, strategic location, educated population and flexible workforce, resilience, shared regional identity, history and values, freedom of movement in a regional economic area.

- 8) *Are there any specific circumstances or mindsets that may need to be confronted in order to address/resolve the challenge that you identified (Please be as specific as possible)?*

Researcher’s comments: The role of knowledge risks and barriers are perhaps even more important than intangible assets as they often are unseen. The cultivation of efforts to challenge assumptions and critical thinking are important but there is a need for considerable conceptual and empirical work here that also takes account of behavioral factors. Counseling, coaching and other tools and the raising of self/collective awareness of these barriers and then taking steps to address them is of relevance. Table 14 presents some of the challenges that were identified by panelists.

TABLE 14: BARRIERS TO SOLUTION FINDING AND PROBLEM MITIGATION

Some Intangible Barriers and Mindsets that may Prevent Solutions
Gender inequality, administrative/political conflict at different levels of government, prejudices based on ethnocentricity and tribalism, winner take all attitude - zero sum outlook, corruption, strong hierarchies and high power distance that prevent collaboration and the questioning of authority, lack of national confidence, weak governance, religious dogmas, colonial legacy, inadequate self-knowledge and a lack of awareness, lack of transparency, wastage, inadequate management skills.

9) *Are there any efforts currently underway to address the challenge you identified? In your view how could the constructs that contribute to individual capacities and capabilities as well as societal values and frameworks contribute to this process?*

Researcher's comments: Table 15 provides some examples of ongoing initiatives. The expertise gained by persons and institutions involved in ongoing projects can be an important resource and provide lessons and useful practices that may inform the city's action. They also provide efforts that may be related and which could be scaled-up or replicated avoiding the need to begin from scratch. Such projects could serve as centers around which communities of practice could be developed.

TABLE 15: SOME EFFORTS AIMED AT ADDRESSING THE IDENTIFIED CHALLENGES.

Leveraging individual and societal capacities to develop responses
<ul style="list-style-type: none"> • Specific youth-oriented initiatives undertaken by municipalities aimed at addressing issues such as entrepreneurship, living together and pluralism are relevant to this goal. • Efforts that focus on building trust, empathy and the changing of mindsets to create conditions for attempting new approaches to solving long-standing issues. • Providing sustained resources and ongoing support for initiatives, knowing that changes in mindsets are often slow. Such efforts need to be supported by the development of requisite capacity. A shift to long term thinking is essential. • The introduction of open data policies, anti-corruption and budgetary monitoring coupled with social media activism is bringing improvement in some areas.

10) *What information and processes do you think could enable stakeholders to develop responses for overcoming / mitigating / resolving the challenge you identified?*

Researcher's Comments: The information and processes for overcoming challenges are a crucial step that form the outcome and serve to provide the actions that are to be implemented. They must build on the earlier steps and the findings. It is also important to conduct reviews to ensure that the efforts are moving in the direction intended. Here too periodic longitudinal surveys of the environment and emerging concerning using the Knowledge-based development Maturity Model is relevant. The only thing that is certain is that things will change, so course corrections, sometimes small, sometimes major will be necessary if the responses are to remain relevant.

TABLE 16: PROCESSES USEFUL FOR OVERCOMING CHALLENGES

Identified information and processes for overcoming challenges
<ul style="list-style-type: none"> • Open information platforms that foster and support transparent and public information exchange and debate between city stakeholders along with outreach to communities that make these processes and resulting policies and programmes democratic and participative. • Building closer linkages between international and regional actors and those at the grass root level to support adaptation and the creation of local activities. • Communities of practice and other structured form of collaboration with other cities were seen as a source of value, as a catalyst for innovation among for-profit and/or social-oriented entrepreneurship activities. • Sustained efforts to enable citizens to have greater awareness of their rights. • Cooperation between stakeholders is not always comfortable, so the process of trust-building is vital. Professionals working in areas such as mediation, sociology, psychology and game theory as well as faith-based and community groups would be relevant in helping to change mindsets around incentives, rewards and what could be possible. • More inclusive approaches imply not only bringing new actors to the table but also preparing them to participate in these roles through education and awareness building among traditionally excluded groups. • Effective and meaningful communication of information and data to the public.

Although synthetic and simulated, but drawing on the very real experience and knowledge of a diverse group of international expert panelists, the foregoing rudimentary outline presents the overarching elements of the process that this study seeks to implement with a view to identifying areas of opportunity and challenges and supporting cities in mobilizing to achieve their goals.

- 11) Dear Panelists, I would like to thank you once more for your participation and contribution to this Delphi Survey and for your kind assistance in refining the knowledge-based development model and identifying relevant indicators/criteria. Kindly take a moment to share with me any feedback, learning, insights or suggestions that have occurred as a result of your participation in this Delphi study.

Panelists perspectives on the Study

More than 30 participants, representing over 90% of the panelists took time to respond to the optional question included at the end of the survey. Many panelists reflected quite extensively on their participation in the study. Many were unreservedly supportive and positive. Some while expressing a high level of support for various aspects of the project expressed concerns or highlighted areas where they felt further improvements were necessary. There were also a small number who felt that their concerns were not adequately taken into account.

While the scope of my PhD and resource limitations, pose restrictions on what I can expect to address at this time, I do intend to continue to explore this area. So I expect that eventually it may be possible to take on board the diverse range of insights you have all taken time to so kindly share with me. I leave with you a selection of the many views that capture the above:

- *Thank you for this intellectual adventure, and the possibility of co-thinking. It was a good method, I've learned a lot!*
- *This has been a challenging exercise and especially for me in Nairobi knowing that there are actual answers to these issues both from academia; research and industry yet they remain largely unimplemented. I wish you well as you complete your research findings and look forward to celebrating another milestone in development - new knowledge.*
- *The knowledge-based development model that is being developed is very good and comprehensive. It would need to have a list of assumptions and requirements that are required for it to work. Its success and/or failure should be attributable to it only, and that can happen when other factors are leveled. Considering how the model could work in say North Korea, Sweden, India and DRC. success for the model under construction.*
- *An excellent effort to codify knowledge cities development model. As no perfect models exist, so attempts to create good models need to be complemented with good field testing. If this takes place, please share any findings with this Delphi-group. In Knowledge Cities, all citizens should ideally be 'smart,' both in the sense of digitally literate and able to think independently about the issues that impact their lives. More emphasis on thinking skills is essential in supporting smart citizens in smart cities. I hope this study will contribute to deeper thinking about that.*
- *I suggest that you read: Wisdom: Its Nature, Origins, and Development (Edited by Robert J. Sternberg) "For several thousands of years wisdom has been mentioned as the capstone of human knowledge" - Toward a psychology of wisdom and its ontogenesis by Paul B. Baltes and Jacqui Smith*
- *I think that the resulting sets of indicators will be a significant contribution to the understanding and development of knowledge societies. I am less enthusiastic about the model insofar it does not aim at capturing the distinctive dynamics of k-based value generation and distribution, as well as the new ethos that such unprecedented dynamics makes possible.*
- *I think that theoretically speaking, your model is valid and useful. In my personal point of view, a better graphic design could help to make it more appealing and easy to understand for decision makers and practitioners.*
- *I have seen significant refinement of the knowledge based development model. The model can help in formulating policies to foster development.*
- *Very good work!! Congratulations! Please, let me know the final results of your research. Thank you for the opportunity to participate in your study.*
- *This method of survey has broadened my views on how to obtain rigor in research work.*

- *Exceptional piece of collaborative research!*

Researcher's comments:

I think the above sentiments are reflective of the diversity of views that are inherent in the challenge of making any to city work more effectively or in any activity that seeks to achieve anything of significance!

My takeaway from all of this is that there is always room for improvement and new challenges to be overcome! 😊

One again I am deeply indebted to all panelists for your time, effort and candor. Thank you all for accompanying me on this journey, I could not have made it this far without your support and commitment.

THE ADDIS ABABA AND BANGKOK FIELD STUDIES

SAMPLE INTERVIEW REQUEST LETTER

From the desk of Mr. Paul G. C. Hector

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9 rue Charles Fourier, 91011 Évry Cedex, France, Tel: +33 6 22 51 21 40; E-mail: paul.hector@telecom-em.eu

Institute for Knowledge and Innovation South-East Asia, Bangkok University
Building 9, 9th floor, Bangkok University, Rama 4 Rd., Klong-Toey, Bangkok, Thailand 10110

2014 - 08 - 16

Mr. Somsit Wannapiroon
Deputy Governor (Western Service)
Metropolitan Waterworks Authority
6th floor, Room No. 609
Bangkok, Thailand
+66 2 504 0123 ext. 1622

Dear Mr. Somsit Wannapiroon,

I received your contact details from Mrs. Wanpen Upton, Senior Specialist in the Government Public Relations Department, who kindly indicated that you would be an appropriate person to participate in the survey on knowledge cities that I am conducting for my doctoral dissertation.

I am based in France where I am employed in UNESCO's Knowledge Society Division and enrolled in the dual-degree doctoral programme in Knowledge and Innovation Management (PhD-KIM) jointly offered by the Telecom École de Management (France) and Bangkok University (Thailand).

As part of my research, I have developed a knowledge city maturity model based on UNESCO's Knowledge Societies conceptual framework. The maturity model I have created seeks to assess a city's progress in mastering its knowledge, that is to say, its development towards becoming a knowledge society.

An overview of UNESCO's Knowledge Societies framework on which this model is based and related background information on my research is included in the attached document. For your convenience, I have also attached some of the questions which I hope I may be able to discuss with you.

During the period 6 to 17 October, I will be in Bangkok to participate in the IKMAP 2014 Conference (9 & 10 October), the Creative Bangkok Conference (12 to 17 October) and to conduct

research interviews. I would greatly welcome an opportunity to meet and interview you at a time convenient for you. I expect that such an interview would require a little over an hour of your time. To thank you for your participation I would be happy to share the findings of my doctoral dissertation.

My research and its findings could be relevant to your institution's activities as it seeks to:

- enhance the theoretical understanding of the factors that influence the ability of cities to mobilize their knowledge assets to address strategic challenges as well as to create and leverage their opportunities,
- support the development of a framework based on UNESCO's concepts for evaluating the capacity of cities to leverage their knowledge, and
- support the identification of policy measures that contribute to the success of key city actors in addressing specific strategic challenges that their city faces.

Thank you very much for your time and attention and I look forward to hearing from you.

Respectfully,

Paul Hector

Enclosed: Background information on the research topic
 Questionnaire

SAMPLE QUESTIONNAIRE & RESPONSES: BANGKOK STUDY

Discussion Questions

- a) What are the major current and emerging challenges around water supply and sanitation? How are responses to these challenges developed?

- b) What are your department's most significant successes over the past 15 years? What factors have contributed to this success?

- c) What role does cooperation with other stakeholders in Thailand - e.g. other government departments, the private sector, communities, academics and other groups - play in helping to improve the sharing of best practices and improving the quality of service delivery?

- d) What role does international and regional cooperation - e.g. sister cities, collaboration with water departments in other countries, membership in regional and international city programmes e.g. resilient cities, cities against climate change etc - or other cooperation programmes play in helping to build staff capacity, support innovation and the sharing of practices that improve service delivery?

- e) How does your department contribute to shaping and/or realizing the Bangkok's city vision?

- f) How are information and knowledge contributing to your department's success?

- g) What could cities in developing countries, e.g. Addis Ababa in Ethiopia, learn from Bangkok's experiences in the area of water and sanitation?

Answer

A	<p>The urgent challenge of Metropolitan Waterworks Authority (MWA) is the climate change causing the decrease in average annual rainfalls. This affects the water volume reserved in major dams the MWA uses as raw waters in the production of treated water. Incorporating with the increase of earth temperature influencing the increase in Mid Sea Level causing the salinity intrusion into Chao Phraya river at the raw water source during summer season. These causes impact the production of treated water as well as the water quality.</p> <p><u>Solutions</u></p> <p>Short-term – MWA collaborates with the Royal Irrigation Department to divert water from Mae Klong river source in the eastern part of Thailand through existing irrigation canals in order to drive the salt water in Chao Phraya river.</p> <p>Long-term – MWA is planning to build water tunnels to permanently divert water from Mae Klong river, which has higher quality water, to use in the water production in the eastern parts.</p>
	<p>MWA's Achievements during the past 15 years</p> <ul style="list-style-type: none">- Customer perspective – MWA has been able to improve services provided to people both living in households and business both services and industries. They are such important customers in terms of quantity due to the increase in needs annually and quality of water that MWA aims that the treated water can be consumed right from the faucets.- Financial perspective – MWA has maintained its financial streadedility both incomes and profits with the 4.7% increase in income growth during the past 15 years.- Organizational management perspective – MWA has been awarded and certified with several standards throughout the years:<ul style="list-style-type: none">In 2002 (2545 BE), Bang Khen Water Treatment Plant Department under MWA has been certified with ISO 9001: 2000 in water production.In 2007 (2550 BE), MWA's laboratory has been certified with ISO/IEC 17025: 2005 laboratory standard from Thai Industrial Standard Institute under the Ministry of Industry.From 2006 to 2012, MWA has been awarded the Excellent Enterprise Awards. <p>Essential factors that are keys to MWA's success include its personnel who are experts in treated water management in big cities and the ample and appropriate IT systems that support the management.</p>
C	<p>How does MWA work with various stakeholders in Thailand and how have the quality of works been implemented?</p> <p>MWA has been collaborated with various agencies as follows:</p> <ul style="list-style-type: none">- Royal Irrigation Department – MWA collaborates with RID in raw water allocation so it is adequate for the water production process.

	<ul style="list-style-type: none"> - Bangkok Metropolitan Administration (BMA) – MWA works with BMA in the expansion of distribution pipe networks to cover all community residences to make sure that they have sufficient quality water. - Residences – MWA meets with community residences regularly to gather information as well as complaints related to water quality. MWA also provides knowledge about efficient water use. - Thailand Institute of Scientific and Technological Research (TISTR) – MWA conducts collaborative research with TISTR in research projects on how to produce interlocking bricks from silt so they can be used in constructions of building or pavements. - Thailand International Development Cooperation Agency under the Department of Foreign Affairs – WMA works collaboratively with the Agency to develop master plan for Luang Phrabang Water Authorities, Laos PDR. - Dhurakij Pundit University, Department of Skill Development Provincial Water Authority and East Water Co. Ltd. – College of Waterworks was founded to educate professionals in waterworks.
D	<p>Up to the present, MWA has been collaborating with international organizations and water authorities from other countries in improving knowledge and competencies among our employees. The collaborations are as follows:</p> <ul style="list-style-type: none"> - In 1987 (2537 BE) Japanese International Cooperation Agency (JICA) provided financial supports for the constructions of National Waterworks Technology Training Institute: NWTTI so it can be the training center in waterworks. - From 2010-2013 (2553-2556 BE), MWA provided funding for its employees for the trips to Japan in order to conduct knowledge and information exchanges with experts at Bureaus of Waterworks in Tokyo, Nagoya, and Osaka. - In 2014 (2557 BE), MWA, in collaborations with World Health Organization (WHO), conducted a training workshop called Water Safety Plan Master Training Program. - MWA is a member of International Water Association and has been supporting its employees to attend the academic conferences being hold in several countries.
E	<p>MWA responds to Bangkok Metropolitan Administration (BMA) through:</p> <ul style="list-style-type: none"> - MWA coordinates with BMA in expanding the tap water distributing network into suburban areas so tap water will be available in every household. - MWA plans to put down the trunk mains and distribute pipes along with the BMA's road expansion projects so treated water can reach the households in BMA's newly developed areas. - MWA inspects and fixes pipes in schools under BMA's jurisdiction to ensure the treated water quality so students can drink water directly from the faucets thus saving money from having to buy bottled water or any other kinds of beverage.
F	<p>Information regarding knowledge that influences the MWA's achievements are as follows:</p> <ul style="list-style-type: none"> - MWA uses the Business Intelligence (BI) system to gather and analyze the data to be used as management information system so administrators can plan and implement policies correctly and accurately. - MWA possesses knowledge of how to improve the raw water quality so the tap water meets the standard quality set by World Health Organization (WHO).

	<ul style="list-style-type: none"> - MWA uses SAP (Systems, Applications and Products) to effectively manage the organization's resources. The system is connected well with other systems such as purchase order system, Account system, production planning, costing system, as well as human resource management.
G	<p>How can cities in developing countries learn from Bangkok Metropolitan Administration regarding experiences in water and sanitation developments?</p> <p>In the case of MWA, knowledge and experiences regarding water and sanitation management in metropolitan can be shared in different aspects:</p> <ul style="list-style-type: none"> - How to decrease water loss through inspections of pipe leakages, pipe fixing, as well as replacing old pipes including the applications of technologies in the management i.e. District Metering Areas (DMAs) and SCADA System - Management of water pressure in the pipelines using Pressure Trend Curve technique - Controlling of treated water production system including improving the water quality

INTERVIEW PROTOCOL: ADDIS ABABA FIELD STUDY

Thank you for agreeing to meet with me. My name is Paul Hector and I am conducting research within the framework of the dual-degree doctoral Program at the Telecom Ecole de Management (France) and Bangkok University (Thailand). My research examines the role that knowledge plays in helping various actors (government, civil society, private sector, citizens) solve human development challenges problems around the issues of 1) Environmental Sustainability, 2) Peace and security, 3) Social inclusion and 4) Economic inclusion.

The university has developed a policy to ensure that all research conducted by its students follows international best practices. As part of this policy I am required to explain to you your rights as a participant in this research process and explain how this information will be used.

This interview should take about 1.25 hours and is confidential and voluntary. Confidentiality means that no information which allows specific comments to be linked to you will be shared with others without your permission. The interview process is voluntary, so you may choose which questions you wish to answer. In addition, you may stop the interview at any time, or even ask me to destroy the information you have provided even after the interview is completed.

The data collected during this interview will inform my doctoral dissertation and the preparation of related academic papers. A list of persons interviewed will be included in the dissertation.

May your name be included in the list of interviewees? Please initial: _____ **Yes** _____ **No**

Digital audio files and transcripts of our interview, if prepared, may be shared only with the universities. A copy of the digital audio file of our interview will be e-mailed to you as well as a copy of the transcript of the interview if prepared. Any digital files from our interview will be encrypted and stored on a database and maintained for at least 1 year after the analysis/study is completed.

Do you agree to recording of this interview? Please initial: _____ **Yes** _____ **No**

The analysis of the interview data will involve the coding and identification of key themes and/or the creation of cognitive maps. In addition, an analysis of common themes across interviewees will be carried out to identify trends.

You will be provided with a summary of the study's key findings and recommendations. If you wish, a copy of the dissertation and resulting academic papers will be e-mailed to you.

Would you like a copy of the final study? Please initial: _____ **Yes** _____ **No**

The purpose and conduct of this research process have been explained to me, and I willingly agree to participate in this interview and to have a digital audio recording created.

Name: _____ Date: _____

Signature: _____ Place: _____

Pilot Survey on the role of Knowledge in the Development of Cities

Part 1: Interviewee Details

1. Name: _____

2. Gender: ___Female ___Male

3. E-mail Address: _____

4. Telephone: _____

5. Name of your Organisation(s): _____

6. Sector(s) in which you currently work:

National Public Sector _____

International Public Sector : Intergovernmental organization _____ Bilateral _____ Multilateral _____

Private Sector: National _____ or Multinational _____

Non-Governmental Organization: National _____ or Multinational _____

Academic/Research Organization _____

7. What is your current job-title? : _____

8. How would you describe your level in your Organization:

Director/CEO ; Middle Management/Technical Expert _; Junior Level _____

Other: _____

9. Which of the following characterizes your primary professional role:

Strategic: Creating the long-term vision and policy of your Organization _____

Managerial: Monitoring progress towards realizing the Organization's strategy_

Tactical: Leading implementation of processes that fulfil the Organization's strategy_

Advisory: Providing expert opinion and/or analysis that informs the actions of others _____

Other: _____

10. Please indicate which of the following processes that have city-wide impact or which potentially could have city-wide impact you influence or contribute to:

a) Shaping, developing or promoting the city's strategic vision and orientation _;

- b) Developing, implementing or advocating policy/policy reform _;
- c) Undertaking or supporting analysis, assessment, research or monitoring _;
- d) Undertaking or supporting project design, financing, development or implementation_ ;
- e) Supporting participation of stakeholders in decision-making, the building of coalitions and consensus_____;
- f) Supporting training or capacity building _;
- g) Promoting international visibility of activities in the city
- h) Promoting international partnerships building_____;
- i) Providing expert opinion _;
- j) Other_____

11a. How long have you lived and worked in this city? _____

11b. Please indicate other cities/countries you have lived in and also the length of time during your professional career: _____

____11c. In the past year I have travelled:

i. Within Ethiopia _; ii. Within Africa _; iii. To Asia_ ; iii. To Europe; iv. To the Middle East____; iv. To North America____; v. To South & Central America____; vi. Pacific; vii. Caribbean

12. Number of years of professional experience: _____

13. Highest academic qualification: _____

14. Age Group: 20 – 34 ; 35 – 49 ; 50 – 64 ; 65 – 79 ; 80 – 94 ;

15. Date: _____ 16. Time: _____

17. City and Country where the interview was held: _____

Part 2 – Knowledge Society Maturity Model

Based on the information in the Maturity Level tables please estimate the current maturity of your city, and place an “X” in the table of ratings below. If you have no information/opinion on an element please choose “0”. If you prefer not to respond to a question, choose “5”.

Please explain the reason for your ranking and if possible illustrate with a project or event you are know. If you would like to propose a modification to the maturity levels please you can put it in the remarks section. An example is given to illustrate the process

EXAMPLE:

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Pluralism - Willingness to actively see other points of view	To what extent is the city able to develop broad-based support for initiatives that address the strategic challenges of the city while responding to conflicting concerns of citizens/stakeholders ?	Lead influential/actors are confident of the merit of their analysis, approaches and legitimacy. Accordingly in line with their responsibility they implement relevant programmes and policies to address the problems they have identified without much if any discussion with stakeholders and affected parties.	Lead/influential actors present relevant programmes and policies to stakeholders and in the event of opposition pursue efforts to gain consensus by galvanizing support for the initiatives and removing or quelling dissenting voices.	City initiatives seek to develop win-win outcomes that maximize benefits and reduce possible adverse impacts on stakeholders. Consultations start early to develop a shared vision and understanding. Relevant expertise and experience from cities which have addressed similar problems is leveraged.	City has considerable experience in complex projects and negotiations and draws on networks of external partners, case studies, mediation and various dialogue building and conflict resolution processes to arrive at agreed context-optimal solutions. High level of trust exists. City regularly shares its experiences with other cities.

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating				X (3.5)		

Reasons for my rating: I think our city is between levels 3 and 4. Recently we were trying to decide on what to do with an old abandoned train station on the city outskirts that was becoming a site for criminal activity. Some persons wanted it to be torn down and a modern shopping centre built to increase business while others wanted to restore it. The Mayor organized consultations and radio/tv debates and involved government departments, the police, social workers, business people, architects, the heritage trust and citizens. Two experts from Nairobi and Dakar came to share experiences of similar projects. Not everybody agreed but in the end it was decided to restore the historic buildings and convert the site to new uses like restaurants, shopping, apartments, a small park and museum. Crime decreased, many tourists visit the area and new jobs were created. Not sure if this was a complex project and if any cities are using us an example, but in general people are happy with what the Mayor did.

Remarks: I am not sure which should receive more weight, the outcome/result that is achieved or the process for arriving at the outcome.

1.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Human Rights - Awareness	What is the general level of awareness in the city around human rights?	Awareness at political level of International normative human rights regimes and customs, and national responsibility as a signatory to one or more of these instruments	International human rights provisions have been adapted and enacted into national laws (constitution, municipal, judiciary), level of awareness implementation and enforcement is variable	Independent national human rights institutions established and have begun to build national capacity and awareness in this field and to conduct assessments and monitoring of human rights. City is seeking to learn from experiences of others.	High level of awareness and understanding of human rights (economic, civil, political, social, cultural) at all levels of society and there is a social expectation that these be realized in the city through actions of individuals and societal actors. City organizes events to raise visibility of its human rights initiatives and to partner with other cities in this area.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

2.

Sub-theme	Criteria	1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Human Rights - Structural measures	What support has the city demonstrated in establishing mechanisms to protect and promote human rights?	No specific human rights institutions have been established.	National human rights institutions newly established and seeking to develop their internal capacity and raise awareness of city departments to incorporate human rights based approaches in their policies and service delivery.	National human rights institutions in place, developing longer term plans for their growth. City departments have established data collection and monitoring plans on the roles of their services in contributing to realization of human rights targets. Local funding is the main source of support.	DeNational human rights institutions conducting capacity building, involved in monitoring and assessment and supporting policy-making. Active in sharing practices nationally, regionally and internationally and effective in supporting their funding.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

3.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Human Rights - Participation	What measures exist to ensure that all persons in the city have equal access to public services and to participate in public life (education, health, employment services, governance, decision-making, shelter etc.)	Little information on accessing public services is available. Access to services is linked to memberships in ethnic groups, social classes, access to privileged information or the goodwill of public officials and other "gatekeepers".	Capacity-building and other awareness efforts are in place to raise awareness of public officials/officers and the public at large of government services, the process to access them. Related policies are being developed. Activities dependent on external funding.	Measures are taken to facilitate participation in public life and to seek views of citizens on public policy issues. Ombudsman and or other mechanisms established to provide persons whose participation rights are infringed with redress. Relevant statistics collected to assess and improve performance. City is seeking to learn from experiences of others.	Existence of barriers to participation (disability, literacy levels, ethnicity, gender etc.) by specific groups is recognized and special proactive measures are in place to reduce these barriers. Outreach activities, such as sharing of lessons learnt with other cities, statistics and other information regularly communicated.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

4.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Human Rights - Non-discrimination	What measures have the city established to prevent discrimination (e.g. on the basis of gender, religion, sexual orientation, race, disability etc).	City government is aware of relevant international treaties that have been adopted and reporting and monitoring mechanisms have been set up in the city. Information provided on how to recognize, avoid and report discrimination.	City is seeking to understand its obligations in light of national legislation adopted ensuring the right to non-discrimination and to establish practical measures to realize this right.	Complaints and monitoring mechanisms established. City staff has received relevant training. Efforts undertaken to promote awareness of adverse impact of discrimination on social cohesion. City is seeking to learn from experiences of others.	Proactive measures in place to address discrimination and provide redress. State support is provided to efforts undertaken by civil society and other groups which seek to promote understanding among populations. Collaboration and partnership with other cities to exchange best practices.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

5.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Human Rights - Accountability	Is information on the operation of the city government and municipal affairs made available to the citizenry?	No right to information or transparency legislation are in place and most public information is not regularly made available by the government. The public and civil servants view all government information as confidential.	Right to information legislation is in place and awareness efforts are underway but lack of resources and systems makes operationalization difficult. Barriers such as cost, bureaucratic procedures impede the process.	Systems & resources for enabling access to public information is in place, information provisions is viewed as a normal governmental functions. Accountability metrics being implemented. City is seeking to learn from experiences of others.	Government proactive in making information available to the public. Government reports and research is part of the public domain and is available free or at nominal costs. Public officials publicly declare assets and voluntarily declare assests. City seeking to share best practices.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

6.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Pluralism - Ethnicity, disability, race.	To what extent do people who are visibly different find it easy to live in the city?	Persons who are visibly different can expect to find living here difficult	Anti-discrimination laws exist but protection of minorities depends mainly on their social relationships and/or links to persons or institutions in the community or specific personal characteristic.	Pluralism is becoming valued, anti-discrimination laws are being enforced. Assistance and support provided to victims, anti-discrimination training and campaigns established with key sectors and actors. Efforts underway to support learning from other cities.	All persons are seen as being able to contribute to civic life and efforts made to provide adaptations and support their involvement. City is sharing its best practices and experiences with other cities.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

7.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Pluralism - Immigrants/migrants	To what extent do immigrants/migrants find it easy to adapt to life in the city?	Immigrants will generally find it difficult to live here	Anti-discrimination and other laws to protect exploitation of vulnerable groups exist but protection depends mainly on their social relationships and/or links to persons or institutions in the community or specific personal or group characteristics.	Contributions of immigrants to the city are beginning to be appreciated. Any restrictions on the participation of immigrants in aspects of public life (e.g. holding political office) are well defined in law.	Programmes to support immigrants integration into all aspects of public life - language skills, politics, employment & culture - and to enable community dialogue continually reviewed and updated. City twinning and similar measures to build cross-cultural dialogue and cooperation are in place.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

8.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Pluralism - Openness to different religious and political beliefs and values	Is your city a good place for persons with different religions, values and ways of living?	Non-mainstream religions and values and their expressions are not welcome.	Maybe tolerated if they have strong links with key persons or institutions but discretion is still essential to avoid problems and possible clashes/reprisals.	May practice their beliefs and values in conformity with existing laws while not infringing on the rights of others. Recognition of the potential adverse impacts of conflict has encouraged efforts to seek and learn from other examples of successful practice. Various cultural practices and groups are also drawn on to resolve issues.	Active efforts to encourage dialogue, to understand accommodations they may require and to raise awareness amongs potentially conflicting groups of each others viewpoints. Efforts made to ensure representation of all groups in policy and decision making bodies. City active in advocacy, conflict resolution and similar networks to share experiences.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

9.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Pluralism - Willingness to actively see other points of view	To what extent is the city able to develop broad-based support for initiatives that address the strategic challenges of the city while responding to conflicting concerns of citizens/stakeholders?	Lead influential/actors are confident of the merit of their analysis, approaches and legitimacy. Accordingly in line with their responsibility they implement relevant programmes and policies to address the problems they have identified without much if any discussion with stakeholders and affected parties.	Lead/influential actors present relevant programmes and policies to stakeholders and in the event of opposition pursue efforts to gain consensus by galvanizing support for the initiatives and removing or quelling dissenting voices.	City initiatives seek to develop win-win outcomes that maximize benefits and reduce possible adverse impacts on stakeholders. Consultations start early to develop a shared vision and understanding. Relevant expertise and experience from cities which have addressed similar problems is leveraged.	City has considerable experience in complex projects and negotiations and draws on networks of external partners, case studies, mediation and various dialogue building and conflict resolution processes to arrive at agreed context-optimal solutions. High level of trust exists. City regularly shares its experiences with other cities.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

10.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Inclusion - Economic 1 - Access to decent work and productive employment	To what extent has the city established measures to support the creation and access to safe and decent work opportunities?	The city is aware of international/regional normative labour standards that have been ratified and adopted nationally and has plans to assess their contribution to the city's welfare.	Laws, policies, institutions to support decent (min wage, max hours etc) and safe work environment are established and awareness raising efforts and capacity building is being undertaken.	Efforts implemented to support equal employment opportunities and workforce diversity. Monitoring, needs assessment and training for emerging needs among employers and employees associations and other stakeholders. City supports programs to advance workers rights, as well as competitiveness and productivity across all sectors.	Updating of policies on basis of monitoring of trends as well as planned and anticipated changes in labour market. City seeks to develop and be known for best in class labour practices. These efforts are viewed as contributors to the city's attractiveness for both national and global business entities.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

11.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Inclusion - Economic 2 - women's participation	To what extent is the city supporting the participation of women in business and the workplace?	No specific initiatives have been launched by the city as yet to address this area, but there is growing awareness of relevant regional/ international normative standards in this area as well as interest in improving and strengthening the city's commitment to human rights and empowerment of citizens.	Impediments to women's participation in the workforce have been identified in consultation with societal actors. Policies -e.g. childcare and training - are being encouraged or established to address the challenges identified and to develop pilots.	Legal, social and cultural barriers to women's ownership of property and business have been addressed. Advocacy along with the monitoring of women's participation in economic activity is identify new trends, needs and to support relevant responses. These efforts are undertaken in concert with other city actors particularly women's groups.	Broad-based social and political support for women's participation, effective women's rights groups and broadbased cross-sectoral partnerships provide multi-tiered responses for equal economic opportunities linked to the city's strategic plans and vision. City is recognized as a leader in this area.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

12.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Inclusion - Social 1: Access to health, food, shelter	To what extent are the city's citizens able to claim and access basic services (health, education, food and shelter) under the relevant government programmes?	Access to basic services and their quality of delivery is highly variable across locations and time. Information on services and process for accessing them is unclear both amongst beneficiaries and the offices responsible for service delivery. There is also limited understanding or recognition that these are human rights.	Policies and programmes for basic service delivery developed/implemented with defined minimum service quality standards for each concerned department. Processes and information is more consistent and systematically provided.	Processes to improve service delivery - quality/quantity - are in place, as well as data collection and analysis to identify gaps and emerging needs to be identified and improvement made. This effort is also coordinated with non-governmental partners offering services in these areas. City is also learning from others.	Extensive cross-sectoral collaborations within/outside government - including consultation with beneficiaries - enable quality, customized, innovative and evidence-based approaches that offer a mix of market and non-market responses to meet citizens' claims and the city's obligations. The city is a recognized leader in this area.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

13.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Inclusion - Social 2: Civic/political	To what extent are the city's citizens able to exercise their civil and political rights?	Low level of awareness among citizens of their civic and political rights and little effort by city leadership to raise or encourage awareness, activism and initiative of citizenry.	Growing recognition of civil and political rights and the positive contribution that civic actors can play in complementing city government's role. Civil society and other civic actors are still relatively weak and unable to effectively engage and participate in the public space but there are growing efforts from various sources to build capacity.	Civil society has become well-organized and there are now multi-tiered and multi-channeled processes including public-private partnerships for engagement, exchange and collective action on public policy issues. Both formal and informal channels for engagement and these efforts and debate generated are seen as valuable by city and citizens.	Highly evolved understanding with stakeholders involved in genuine, inclusive dialogue and contributing to strategic decision-making processes. City is seen as a model for inclusive multistakeholder civic engagement.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

14.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Equity - Citizens' basic needs are being met	To what extent are the basic needs of the city's citizens being consistently and adequately met?	Basic needs of the majority of the population are not being met in terms of quality, consistency and quantity. High levels of inequity exist which appear to be increasing and becoming stress points and triggers for reduced social cohesions and other adverse effects.	Policies and programmes to meet basic needs are being created and priority areas for interventions with targets and minimum services levels have been established based on consultations with citizenry and in alignment with the city's strategic plan and vision.	Programmes for the delivery of basic needs and services are being implemented, data collection and analysis is being used to enhance effectiveness as well as identify gaps and emerging needs. City also uses benchmarking and other processes to compare its actions with other cities and support improvement.	Extensive cross-sectoral collaborations and offerings provide an adequate mix of market and non-market, innovative and traditional responses to meet basic needs of all citizens. High level of concern and commitment at all levels to ensure decent standard of living for all citizens contributes to strong social cohesion. City recognized as a model.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

15.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Equity - Social burdens and rewards spread evenly across citizens.	To what extent is the city taking active measures to ensure that the benefits of developments are spread widely and to ensure that adverse impacts are better managed and anticipated?	Where they exist, measures for the fair sharing of social burdens and rewards no longer reflects the current context and are largely inadequate to achieve their desired goals.	Existing policies are being updated to take into account current challenges of vulnerable groups, to support progressive assessment schemes - e.g. in the area of taxation - that spread citizens contribution to city's upkeep more evenly. Similarly, efforts to provide social services and create opportunities for less well citizens such as access to education are being formulated.	Multi-dimensional criteria used to develop, interpret and assess impacts of city initiatives and minimize adverse unforeseen or counter-intuitive outcomes. Social impact assessments, community consultations and related mechanisms support this process offering richer insights and the identification of better solutions.	Regular compliance inspections, longitudinal studies and updating of policies to reflect changes in underlying policy assumptions and new emerging trends. Where justified affirmative or special situation initiatives developed. Cross-sectoral cooperation and networks support the exchange of information and best practices.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

16.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Equity - gender	To what extent does the city conduct gender advocacy and monitoring within its strategic planning, policy development and service delivery.	No specific gender-informed approaches have been developed or incorporated to inform the city's actions and activities.	Specific, narrowly defined and potentially polarizing thematic areas have been identified as foci for monitoring and gender advocacy efforts - e.g sexual/reproductive health, situation of sex workers. Findings and underlying issues of power relationships still not addressed or translated into other sectors and broader policy changes.	Critical approaches that examine issues of power, legitimacy are being employed to support advocacy, build deeper awareness and understanding. Cross-sectoral collaboration, coupled with capacity building provides both the will and techniques for operationalizing gender equity as a goal and contributor to the city's strategic vision.	Strong social and political support with an gender equity viewed as a crucial asset in the city's development and the realization of its strategic vision.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

17.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Equity - Policies addressing basic needs are adequately communicated and applied fairly	To what extent has the city taken measures to ensure that beneficiaries have adequate information about policies and programmes for access to basic services - health, housing, training etc. - for which they are eligible?	No specific outreach efforts are being made by relevant departments or services to provide information on the services they provide.	Advocacy and outreach programmes provide information on how to access services. Information is communicated through multiple channels - e.g. radio announcements, billboards, NGOs working in these areas - to help overcome any limitations that beneficiaries may have in accessing information. Capacity-building of staff delivering services.	Regular monitoring and tracking of beneficiaries to assess uptake of services and impact. Systems for receiving and handling inputs from beneficiaries and partners - including complaints - help enhance programme delivery and identify areas - e.g. assistance for illiterate persons or with a disability - to improve access to services.	Policies systematically reviewed in cross-sectoral forums to identify new and emerging context/trends and revise/update policies and programs accordingly. Audit systems applied to detect and reduce fraudulent practices.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

18.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Openness - Transparency of decision making process	To what extent do the city's citizens are informed and opportunities to contribute to setting strategic goals and attaining them?	Citizens are informed of the strategic decisions and conclusions by experts and government technoats	Interactions and discussions with citizens is focused largely on building public consensus and supoport for the decisions that have been taken.	Broadbased, multi-stakeholder and inclusive public consultative processs to identify strategic issues and to sbape the approaches to adressing them are a common feature. Government regularly communicates information on its activities and outcomes and provides channels for independent and even dissenting views.	Public are regularly informed of progress and provided with data/analysis on the implementation of decisions and their views inform review and ongoing implementation. Regular communication with representatives and key public officials are provided.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

19.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Opennes - Willingness to venture outside one's frame of reference	To what extent is the city government using broad-based patnerships and collaborative approaches to more effectively realize its development targets?	Little collaboration between branches of government in developing, delivering and assessing their administrative or development programmes leading to duplication and conflict.	Contribution of interdepartmental collaboration for more effective service delivery of government services is being recognized and informal and formal enabling mechanisms to buuild internal partnerships are being established.	Setting of strategic goals and vision is informed and undertaken through broad-based, diverse, stakeholder consultations. The city regularly seeks advice and input from various panels composed of experts and representatives of stakeholders groups and commissions studies to inform its actions.	Action oriented tools such as 360° reviews used to assess value of collaborations and in turn drive improvements that enhance the delivery of services. City also invites citizens' opinions through polls and other surveys.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

20.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Openness - Open standards, collaboration and knowledge sharing	To what extent does the city use open standards/solutions (Open source, open data, open access, open cloud etc) to promote access to public information and unlock value of public data?	Potential contribution of open standards and open philosophy in drawing value from government data and supporting information industries is not understood.	Resources and policy framework established to promote online access to government data and its re-use by information industries.	Publicly funded research and data is routinely made available by all branches of government under open licensing using open file formats.	Government actively promotes the development of value-added information services based on its data and related information based industries.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

21.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Freedom of expression - Climate for free discussion and exchange.	To what extent does a climate which support freedom of expression and the exchange of views; including freedom of the press; encouraged in the city?	An enabling environment for exercising this rights is not yet in place, no freedom of information laws. censorship & Internet filtering; laws that criminalize libel, lack of protection for journalistic sources dissuade the exercise of this right.	People are generally reluctant to share their views not necessarily due to a fear of reprisal but also out of concern to avoid unintended embarrassment of others. International commitments to the protection and promotion of freedom of expression have been enacted in local law and the constitution	Citizens feel confident to express themselves freely and clearly and discuss with others. They also appreciate that mutual agreement is not always possible in the diversity of opinions present in the community. Nevertheless discussion and debate are seen as important contributors to building understanding and social cohesion. Censorship is disclosed and open to appeal.	Public officials, citizens, civil society, private sector and other stakeholders actively and constructively engage in shaping public policy discourse.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

22.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Freedom of expression - Diversity, independence and sustainability	Is the city's media landscape characterized by a diversity of choices, viewpoints, independence and sustainability?	Challenges such as legislative and capital barriers to entry and sustainability pose significant challenges for diversity.	Legislation/ policies to promote competition, access to information, transparency of ownership, media independence being put in place.	Wide range of types of information content and perspectives available and there is adequate advertising, sales revenue or other funding to sustain independent and quality information.	Private broadcasters play a limited public service role, content is gendered, social groups are fairly portrayed, government promotes diversity, independence and economically viable media landscape.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

23.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Freedom of expression - Professional standards	Does the media practice high levels of professional standards?	No formal entry requirements to the profession, reporters seek to to be fair and accurate in their reporting but quality is variable.	Salary level and working conditions, including safety, of journalists is adequate. Voluntary codes of conduct guide media practitioners with oversight by an independent body to address complaints and regulate the profession.	Professionals associations effectively represent the interest of media practitioners and media organizations in addressing issues that impact the profession and their mission of providing quality information to the public.	Media professionals have access to ongoing opportunities for professional development and all journalists regardless of race, gender, religion, disability etc. have equal opportunities for professional advancement

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

24.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Freedom of expression - Transparent and independent regulation	Is the State Broadcaster an editorially independent public service broadcaster?	Broadcasting legislation has not been updated in the last 5 years and contains no provision for community radio or other means for providing legitimate civic expression.	Editorial independence of state broadcaster is protected in law.	State broadcaster is publicly accountable and adequately funded and shielded from political or commercial pressures.	State broadcaster offers diverse quality programme content and fomats including local content and public interest issues. Has an indepenedent board that is transparently and openly selected.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

25.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Freedom of expression - Transparent and independent regulation	Do broadcasting regulations exist and if so are they implemented effectively, transparently and independently?	No broadcast regulations exist or where they exist do not cover the specific needs of one or more of the following broadcast segments: public, private, community broadcasters.	Broadcast legislation is in place to regulate the operation of all brpoadcasters.	Independent body exists to regulate the broadcasting landscape, to ensure a diversity of views and fairness.	Broadcast regulator is independent and publicly accountable. Policy and practice environment is conducive to public, commercial and community broadcasting.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

26.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Universal Access to information and knowledge - Transportation network	To what extent does the transportation network and infrastructure facilitate communication and the movement of people, goods and services?	Limited transportation network makes movements of people, goods and services slow, unreliable and costly.	Transportation networks exist but demands on the network far exceed its capacity and/or there is inadequate maintenance of the networks. Commuting within the city is time consuming and unpredictable.	Adequate and accessible (cost, needs of users e.g. persons with disabilities, multilingual) transportation networks within the city. Flexible service hours with extensive use of information based services to support efficient and effective use.	Excellent intra-city travel travel connections with numerous travel routes and/or modes of transportation. Excellent intercity, regional and/or international travel with low barriers to movement of good services and people.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

27.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Universal Access to Information and knowledge - Government information and services	To what extent can Citizens access information and government services on-line	Citizens and businesses can access government website to obtain information about government services	Citizens and businesses can access on-line forms and other documents required for obtaining government services.	Citizens and business can submit requests for government services provide opinions other feedback. Online services are also regularly updated and accessible on a range of platforms. Needs of special groups - persons with disability etc. - are also taken into account in the design of these services.	Citizens can complete transactions for government services online and also receive feedback on line to their queries.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

28.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Universal Access to information and knowledge - Affordability of Internet services	To what extent is the city government involved in ensuring that citizens have affordable access to Internet services?	No specific measures have been adopted by the city to address this issue.	Government in concert with specific partners provides, community access points, targeted subsidies or grants on a case by case basis to support affordable access to Internet services.	Specific government institutions or services - e.g. schools, post offices, libraries, business incubators etc. - provide free or low cost access to internet services for specific target groups.	Government employs a mix of market and non-market policy interventions, as well as partnerships, to ensure that affordable Internet access is available to all citizens.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

29.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Universal Access to information and knowledge - Supporting human capacity to use Information and knowledge networks	To what extent is the city developing the capacity of its citizens to utilize ICT networks and content	Focus on training of staff in government services to use ICT tools that support effectiveness and efficiency of government services.	ICT skills training and ICT-enabled national education learning pilots undertaken at tertiary, secondary and primary levels.	Progressive introduction of ICT skills training and ict-enabled education all teacher training programmes as a core skill in national educational curricula at tertiary, secondary and primary levels.	Multi-tiered formal and informal education programmes focus on all citizens with specific programmes to address the capacity-building needs of marginalized and vulnerable populations.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

30.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Cultural and linguistic diversity - promoting diverse cultural heritage	To what extent are cultural heritage and expressions that reflects the city's diversity promoted and valued?	Very little activity in the way of preserving or promoting the tangible or intangible cultural heritage and expressions. Those which are depicted are mainly those associated with high culture, dominant groups or which have attracted the interest of external supporters.	Policies and programmes are being established to support a more diverse representation of cultural heritage and expressions and to support related public awareness and education. Tensions between the past and present e.g. between modernity and present goals/values current and past social orders etc have not yet been collectively resolved and pose challenges for its preservation and role in society .	Tensions around culture and its expression have been resolved. Cultural institutions and other specialized groups are present and play an active role in supporting the development of expression/cultural heritage in a range of areas - food, handicraft, performing arts, sports, civilizations - from a theoretical/academic perspective but also as a contributor to the city's collective identity, place and space.	Cultural diversity is articulated as a contributor to the city's development goals (social, political, economic), as a positive contributor to civic life, social cohesion and a shaper of the city's vision and future. This importance is reflected in public funding, events, the design and use of public spaces and the city's memory and contemporary programmes as well as the city's international perception and reputation.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

31.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Cultural and linguistic diversity - promoting multilingualism	To what extent is the use of local, regional and international languages promoted	No specific measures have been adopted by the city to address this issue.	Government is seeking to make its services available in all national languages including Braille and sign languages but coverage is not uniform.	Government services accessible in all local/national languages. Public resources available for promoting national/local language and related cultural expressions. Mother tongue language primary education is available in all schools. Public schools offer local, regional and international languages as part of their curricula.	City actively promotes in cooperation with a range of partners access to opportunities to learn foreign languages and to participate in a range of related activities such as study/work-abroad, sporting, cultural and other exchanges that support the city's linguistic and cultural diversity.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

32.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Cultural and linguistic diversity - promoting cultural industries	To what extent are cultural industries promoted and valued as an engine for socio-economic growth?	Cultural industries are largely informal and not seen to have much potential. Mechanisms for preserving and perpetuating the unique knowledge and history they embody is weak and in danger of disappearance.	Circumstances, events or concerted activities by lead individuals, groups or bodies within or external to the city present a different perspective on cultural industries that leads to efforts to develop policy and support a new vision and prospects for cultural industries.	Cultural industries are recognized and supported as a key contributor to the cities development and as a unique competitive differentiator that the city can leverage in adding value across a range of service and production sectors - tourism, agriculture etc - this view is well articulated in development strategies and supported by relevant policies and programmes.	Strong cross-sectoral support for cultural industry with forward and backward linkages. Strong national and international reputation and value that the city is also seeking to capture promote and protect as part of its unique brand and image.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

33.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Education for all - Nurturing talent	To what extent is the city seeking to nurture and invest in its human talent?	The city is still struggling to meet quantitative and qualitative international development goals of universal primary school education for all children and has significant numbers of illiterates among its adult population.	Affordable secondary education - whether academic or vocational - and adult education programmes are available in a range of traditional and non-traditional areas. These activities are also being supported by required facilities and qualified instructors.	Most students participate in extracurricular activities and school trips and such as the arts. Affordable quality primary, secondary and tertiary institutions	City provides free or subsidized kindergarten education. Grants are also available to support life-long learning. Training programmes have been launched in specialized areas - e.g. culture, sports, entrepreneurial areas - to build and incubate skills in high-value and high impact specialized fields. These activities are also closely linked to the city's strategic vision and plan.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

34.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Education for all - Attracting and retaining talent	To what extent is the city seeking to systematically attract and retain the necessary human talent to support its ongoing development and the realization of its strategic vision?	No specific measures have been adopted by the city to address this issue.	The loss of qualified citizens to "brain drain", coupled with the lack of mechanisms to support knowledge transfer and capture between external experts brought in to support the city's development needs are being recognized as unsustainable and a barrier to the city's future growth. This is in turn prompting the formulation of relevant policy measures.	The city continues to assess its skill and talent needs across a range of sectors. Various pilot projects based on identified sectoral needs are being implemented to attract key talent identified and to generate these skills. Ongoing monitoring and assessment undertaken to understand the impact of these programmes in achieving desired goals. Identified gaps and learning used to refine and improve programmes.	City's has developed a vision for its current and future orientation which is clearly articulated and well communicated. Policies to attract and retain talent both local and foreign are established and linked to its strategic vision. These policies are transectoral and seek to address both tangible and intangible aspects that make the city both a good place to work but also a good place in which to live.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

35.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Education for all - To what extent is the city support greater global citizenship education	To what extent is the city preparing its inhabitants to participate in an environment which increasingly involves participation in diverse, multi-cultural international teams at work study and leisure?	No specific measures have been adopted by the city to address this issue.	City is seeking to leverage its diaspora networks to gain insights into other cultures and to also mobilize opportunities for city-dwellers from other countries, cultures, religions to share experiences. Global citizenship education curricula piloted in formal and informal education programmes to strengthen appreciation of local cultural and enhance awareness /understanding of others.	City supports commemoration of cultural events of its local and expatriate residents. Efforts made to support city-twinning activities particularly with cities and countries where trade, tourism and other links exist. These efforts seek to support the city's strategic vision and goals.	Active participation in co-learning initiatives with other cities, city-twinning programmes, cultural exchanges, tourism, study abroad, business partnerships and other activities that serve to enhance city's awareness of others but also contribute to enhanced awareness and reputation amongst others cities and countries.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

36.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Education for all - To what extent is the city support greater global citizenship education	To what extent is the city preparing its inhabitants to participate in an environment which increasingly involves participation in diverse, multi-cultural international teams at work study and leisure?	No specific measures have been adopted by the city to address this issue.	City is seeking to leverage its diaspora networks to gain insights into other cultures and to also mobilize opportunities for city-dwellers from other countries, cultures, religions to share experiences. Global citizenship education curricula piloted in formal and informal education programmes to strengthen appreciation of local cultural and enhance awareness /understanding of others.	City supports commemoration of cultural events of its local and expatriate residents. Efforts made to support city-twinning activities particularly with cities and countries where trade, tourism and other links exist. These efforts seek to support the city's strategic vision and goals.	Active participation in co-learning initiatives with other cities, city-twinning programmes, cultural exchanges, tourism, study abroad, business partnerships and other activities that serve to enhance city's awareness of others but also contribute to enhanced awareness and reputation amongst others cities and countries.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

37.

Sub-theme	Criteria	Maturity Level			
		1 - Initial	2 - Defined	3 - Managed	4 - Integrated
Educaton for All - Media and information literacy	To what extent is the city preparing its inhabitants to develop the media and information literacy skills required to live, play and work in an environment where ICT and ICT based content is a common feature?	Various adhoc measures in place but no systematic programmes, skill or competence frameworks established.	National competency frameworks for the use of ICT and ICT based content and curricula are being developed and piloted in schools. Training and staff development programmes of public sector and other institutions are recognizing this as an important core competency.	ICT-based/supported industries serving both local and foreign needs are increasingly important contributors to economic activity in the city. In addition to using ICT based content there is a growing availability of ICTs and ICT-based content adapted to local challanges, languages and needs.	Proficiency of city and its populace in use of ICT leads to grater offerrings as well as the need for specific policies, laws and initiatives to address their growing role and importance. Attention is increasingly being given to aspects related to attitudes, values and emerging social trends.

Rating:

	0 – No opinion	1 - Initial	2 - Defined	3 - Managed	4 - Integrated	5 – Prefer not to respond
Rating						

Reasons for my ranking:

Remarks:

Part 3 – Key Challenges Facing the City

For each of the following four areas please indicate up to 3 challenges that you feel the city must address to ensure a good future for its inhabitants.

For the challenge that you consider to be the **most critical or urgent** please indicate:

What do you feel are the main/root causes of this challenge?

Who do you think are the key actors who can most influence a successful response to this challenge?

– which are decision makers (D), implementers (I) and beneficiaries (B)?

Please indicate if any of these actors already work together or have potential conflicts in terms of interest/power?

What information or knowledge do you think is needed by each group to adequately respond to the challenge?

Are there any specific advantages (cultural, location, reputation, organization, experience, partnerships etc.) that your city has which can be drawn on to solve the challenge you identified?

1. Environmental Sustainability (Please place an “*” next to the most urgent challenge)

What are the main/root causes of the most urgent challenge you identified? (Please be as specific as possible):

Which key actors or groups of actors are needed to successfully respond to this challenge? (Please be as specific as possible):

What specific information or knowledge might be needed by these key actors to adequately address this challenge?

Is there evidence of existing collaboration or conflict between any of the key actors you identified? Could you please explain?

Are there any specific advantages or resources (culture, location, reputation, experience, partnerships etc.) that your city can draw on to solve this challenge? (Please be as specific as possible):

What specific or unique disadvantages that may need to be confronted in order to address this challenge? (Please be as specific as possible):

2. Peace and Security (Please place an “*” next to the **most urgent challenge**)

What are the main/root causes of the most urgent challenge you identified? (Please be as specific as possible):

Which key actors or groups of actors are needed to successfully respond to this challenge? (Please be as specific as possible):

What specific information or knowledge might be needed by these key actors to adequately address this challenge?

Is there evidence of existing collaboration or conflict between any of the key actors you identified? Could you please explain?

Are there any specific advantages or resources (culture, location, reputation, experience, partnerships etc.) that your city can draw on to solve this challenge? (Please be as specific as possible):

What specific or unique disadvantages that may need to be confronted in order to address this challenge? (Please be as specific as possible):

3. **Social Inclusion** (Please place an “*” next to the **most urgent challenge**)

What are the main/root causes of the most urgent challenge you identified? (Please be as specific as possible):

Which key actors or groups of actors are needed to successfully respond to this challenge? (Please be as specific as possible):

What specific information or knowledge might be needed by these key actors to adequately address this challenge?

Is there evidence of existing collaboration or conflict between any of the key actors you identified? Could you please explain?

Are there any specific advantages or resources (culture, location, reputation, experience, partnerships etc.) that your city can draw on to solve this challenge? (Please be as specific as possible):

What specific or unique disadvantages that may need to be confronted in order to address this challenge? (Please be as specific as possible):

4. **Economic Inclusion** (Please place an “*” next to the **most urgent challenge**)

What are the main/root causes of the most urgent challenge you identified? (Please be as specific as possible):

Which key actors or groups of actors are needed to successfully respond to this challenge? (Please be as specific as possible):

What specific information or knowledge might be needed by these key actors to adequately address this challenge?

Is there evidence of existing collaboration or conflict between any of the key actors you identified? Could you please explain?

Are there any specific advantages or resources (culture, location, reputation, experience, partnerships etc.) that your city can draw on to solve this challenge? (Please be as specific as possible):

What specific or unique disadvantages that may need to be confronted in order to address this challenge? (Please be as specific as possible):

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

SAMPLE TRANSCRIPT OF ADDIS ABABA MATURITY MODEL PILOT INTERVIEW - RESPONDENT #Z3

Place of interview: (not disclosed)

City: Addis Ababa

Date: 28 April 2014; 2:00 p.m.

Speaker 1: ...Okay, so maybe it's good just to glance through it so that you can see the sort of types of questions which is sort of like a background.... I've asked things like which cities have you lived in , which cities you are living and working in? Because again this says something about your ability to compare Addis with other cities, etc. To sort of get an idea of your involvement in city and city activities, at one level or another whether informal or formal is also quite interesting. Okay good. So this brings us to the first part.

Speaker 2: So this is it?

Speaker 1: So I showed you the UNESCO model in different areas, so one will think we're looking at is human rights awareness and how would you assess the level of awareness around human rights in the city? And here I provided some choices. Now sometimes things won't fall in a particular category, it may be an overlap with something else. So if you thought you're between here and here, you can say 1.5, etc, as the case maybe.

Speaker 2: I would say it's between these two.

Speaker 1: Okay, so what you can do is put 1.5 in for that question.

Speaker 2: And do I answer it here?

Speaker 1: Yes, yes, just question mark.

Speaker 2: Here and circle here.

Speaker 1: Yes, you can just put 1.5.

Speaker 2: 1.5.

Speaker 1: And any particular reason is, maybe you can refer to a project, an incident, just so we understand y why, what's the basis I mean it doesn't have to be very detailed.

Speaker 2: Yeah, I mean...

Speaker 1: Or you can say, it orally.

Speaker 2: I can say orally, it's faster. I have seen it from a project we worked with [REDACTED], she's a woman who's fighting the elimination, fighting to end early marriage, not early marriage but FGM (Female Genital Mutilation) and I remembered very clearly when we did a big project with UNFPA 5-6 years ago, the support we had from the government was very, very high. But then once you go into the communities, you see some of the laws

In light of the sensitivities surrounding the issues discussed the Identities of Addis Ababa participants as well as events/incidents that may reveal their identity are suppressed.

not being... you see the understanding, the personal commitment that the law makers have, does not translate, it's not passed down to the communities in the rural areas. So that's when why I see that it's not very integrated and managed, that's clearly there's an awareness at a political level and laws are being established in different parts of the country, but it's not quite integrated yet, that's the reason, that's the specific example.

Speaker 1: That's great, because projects, are I think it's a very good way of contextualizing.

Speaker 2: Absolutely.

Speaker 1: So here we look at another aspect of human rights, which is what we call structural measures in terms of how, what sort of institutional framework has been put in place to enable human rights

Speaker 2: You talk about the city, not the country.

Speaker 1: I am more interested in the city but they are clearly inter-linked.

Speaker 2: So going back to my first question, it's really based on [the] nationwide [context], but the laws come out from the city.

Speaker 1: I think that Addis Ababa as a Federal State it also operationalizes these laws?

Speaker 2: Yeah.

Speaker 1: The laws have to be operationalized from Addis.

Speaker 2: Formatted.

Speaker 1: Yes.

Speaker 2: I am not aware.

Speaker 1: Okay, alright.

Speaker 2: I'm not aware, if there is...

Speaker 1: So you can indicate that?

Speaker 2: So no opinion?

Speaker 1: Okay.

Speaker 2: Not aware, but I am aware of many private organizations and NGOs that have been formed in the last 16 years to protect human rights. I am familiar that those exist, that on the governmental level I am not sure, but I am sure something exists. I know something exist in terms of child labour, protecting children rights by the government.

I think we're at a very high level, integrated in this area, partly because in the time of the Derg, the socialist regime, Kebeles were formed. Kebeles are like neighbourhood community government centres that report to the Woredas and the Woredas report to the City and the City reports to the Federal [government]. At those small levels, they've been doing a lot of

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training in terms of getting awareness of education, health, employment service, they know their rights. [REDACTED]

So the fact [is] that from the Kebele level, they knew the rights of a dog!

Speaker 1: this shows....

Speaker 2: So to answer this question, it would be at an integrated level. In answering I tried to use specific examples.

Speaker 1: This is really very good. Also, if you have any problems with the questions, if you think maybe there should be others things that we should look at, you can also mention that as well, because as I said we are piloting the questionnaire.

Speaker 2: Would you like some coffee?

Speaker 1: No thanks.

Speaker 2: I think I would go between 2 and 3 on this, between defined and managed, just knowing that our country is a model country divided by ethnicity and the reason that was done was to ensure that people's voices are heard around the country. The majority of Addis Ababa, of Ethiopia is Oromo, y it's been ruled by the Amharas for 100s of years, yet now the ruling party is actually Tigrayan which is a minority ruling the majority of Oromos and Amharas. But you also know that here in Addis lies parliament, and a government centered around, built around ethnic divisions, and so every one's voice is heard!

Speaker 2: So that leads me to believe it's defined, we know it's defined and we know it's managed. Is it integrated? I don't know. So my comfort level would be between 2 and 3.

Speaker 1: Something like 2.5

Speaker 2: 2.5 yes, I don't need to write it, it's all here.

Speaker 1: Yes.

Speaker 2: Maturity level, I think I'll almost say 1 just because I haven't seen it done by the city government. I've seen it done by NGOs but I rarely see stuff coming from the government in terms of informing the public of their rights. I mean this leads to the whole question of - number 6 is the whole gay rights, you know you have heard about the law? It's

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a criminal offense to be gay in Ethiopia and there were about to sign a law like Uganda, making it an unpardonable criminal law coming out for you to be gay. Now then the question becomes - how do you define gay? So they have defined it - If you're caught in the act of having sex, then what exactly constitutes the act of being gay? And then they said anal sex. And how would you find it and what's the evidence? So there is so much around it and then finally I think Meles Zenawi said years ago, we are here to see oversee the running of a nation, not oversee the usage of people's butts. That's not our job as a government. But then recently, in the last 4-5 months, they revised it [government's perspective] to you know make sure it's an unpardonable criminal law. And that kind of faded in the last couple of weeks, but the fact that they were even questioning that, just leads me to believe, how mature are we? I don't know, would someone like gay stand out?

Speaker 1: We actually have a question when we talked about beliefs and values which are not main streamed, where as this one is more about, it's is about ethnicity, disability and race.

Speaker 2: yeah.

Speaker 1: Or it could be that we package all of these things together.

Speaker 2: It could be... since you haven't eaten anything.

Speaker 1: Thank you.

Speaker 2: So I will say 2. Immigrants and Migrants - Immigrants are people coming to the country and migrants are people who are leaving the country?

Speaker 1: So you can have migrants who are internal, for example, people who move around internally. Immigrants, displaced persons, I mean they could be people who are transitory for example someone was moving from let's say from the country side to the city to take up residence. This could be internal migration or you can also have someone moving let's say for example from Sudan coming to Ethiopia to go to Yemen.

Speaker 2: He's migrating.

Speaker 1: Exactly, so this would be migrating.

Speaker 2: Yeah, I have not been... I have no opinion on this one.

Speaker 1: Okay, no problem. So I think this one refers to what you were talking about different beliefs, values, system, etc.

Speaker 2: It can vary, I think if someone's practising their own religion then easily, but someone who is gay maybe not, maybe someone who's of different colour, may be accepted. If not accepted, maybe... it varies

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Speaker 1: Do you think it will help them to separate these, so instead have one for religion, one for beliefs, and one for politics...

Speaker 2: Absolutely. So I would say, politics - zero tolerance, zero, unacceptable. You can't come in with your own political views. You just have to accept what's here and love it. And then social I would give it very high, maybe 3, it's accepted, it's tolerated, it's welcomed, it's encouraged throughout different socials. Then sexuality, I would give 0 at 1, no, no. We can have a minus 1 here, because it's unacceptable. So this has been answered.

Speaker 1: Okay, so this one improvement I could make to the question, make it more fine grained.

Speaker 2: Yeah so this one would be, it varies, depending on different elements. Yeah I would say integrated, I would say a 4 on this one. As you see our city is growing at a very fast rate, changing, the proof is in the pudding. It's not easy, it's a very difficult process but ultimately I think it's a very integrated process.

Speaker 1: Okay what's important too; it's not so much the title.

Speaker 2: I understand, yes.

Speaker 1: But do you feel there's a high level of trust between the different, and...

Speaker 2: Absolutely, there's so many foreign partners coming to the country and they are handing it over blindly and letting them do their job and look what they have done.

Speaker 1: Okay, Okay.

Speaker 2: Airport, the Kuwaiti Government, you know they are continuously... Yeah, I don't see any of them, I see it as zero, nothing has been done.

Speaker 1: Okay.

Speaker 2: I think we still have domestic labour being paid 400 birr a month which is US\$20, what number is that? 10? Let's say minus 1. Yeah, 1, definitely 1. Nothing has been done by the government, it's all been done by the private sector.

Speaker 1: Any collaboration between government and society?

Speaker 2: There's always collaboration with the government with everything, they are just being led by civil society and not being led by government. The success level for me comes when it's led by the government. I'd say 1. 1 minus 1, discouraged. Minus 1.

Speaker 1: Well for example, you see a lot of concerts being held, where the public spaces are used to put on events which...

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Speaker 2: Yeah but not very encouraged. You go through hoops to get those approved, tons of security, fear of large groups of people gathering, fear of opinions being, I mean... Isn't this wonderful? The cake.

Speaker 1: Yeah it is, very light.

Speaker 2: Very light, fluffy, and that cake may help you in your dissertation. The fluffiness of the cake I would say it's very integrated, it's fluffy, it's airy, it still has texture, not too much sugar, and buttery but not greasy, it's just I think between 3 and 4, wouldn't you say?

Speaker 1: (laugh)

Speaker 2: Yeah 2.

Speaker 1: Okay, are you aware, of any sorts of collaboration with other cities, things like city twinning, and those types of activities?

Speaker 2: No we work a lot with NGOs and organisations.

Speaker 1: Okay.

Speaker 2: But not with the city directly.

Speaker 1: Okay, Okay.

Speaker 2: Yeah, no opinion.

Speaker 1: No opinion? okay.

Speaker 2: Yeah 1, number 17...

Speaker 1: It's falling apart...

Speaker 2: Yeah I know it's 18. Yeah I'll say between 3 and 4 because there are policies, through the Kebele system it's being transferred to the lowest level, to the illiterates, it's all there. So somewhere between 3 and 4 I don't know about the other, but I will say 3.

Speaker 1: So you see Kebeles as very important.

Speaker 2: Oh yeah I see it as very important. We all thought it was very cumbersome in the time of the Derg, the socialist. We thought it's like very, very cumbersome and now when you look at this country growing in very fast rate, the voices needs to be heard, so they are heard at that level.

Speaker 2: Yeah, minus 1.

Speaker 2: I see an old friend there whom I haven't seen in years. May I take this up?

Speaker 1: Yes, yes, yes, yes.

Speaker 2: Sorry

Speaker 1: No problem.

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Speaker 2: Okay, when I'm focused, I'm good; don't worry. Have you been recording all my conversations so far?

Speaker 1: I didn't stop it but...

Speaker 2: Oh, you've got to be kidding me!

Speaker 1: I'll erase those and they won't be included in the interview...

Speaker 2: You know, I'm not aware of this...no opinion.

Speaker 1: Okay, so yes...

Speaker 2: Number?

Speaker 1: 19.

Speaker 2: Yeah, similar. Yeah, I'd say between one and minus one.

Speaker 1: Okay.

Speaker 2: Between 1 and minus 1.


Speaker 1: Off the scales?

Speaker 2: Way, way off, sometimes...

Speaker 2: Yeah minus 1 and 1. Number, what's that?

Speaker 1: 22

Speaker 2: Let me give you the reasoning for the last two questions. Why it went to minus one is we have, you know, we are media placers.



Speaker 2: Today's-what's the date?

Speaker 1: 28th.

Speaker 2: 28th...

Speaker 2: Yeah, one, one. One because we deal with the media all the time and we see the level, it's very poor and extremely inconsistent. Sorry about this Paul.

Speaker 2: Yeah, way below, because I live it every day, you know? What's transport? Like physical movement of people?

Speaker 1: Yes this is all about its effectiveness, efficiency and accessibility to move people goods and services...

Speaker 2: Goods? Is it accessible like imported tomato paste?

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Speaker 1: Say what?

Speaker 2: Like imported tomato paste, like parmesan cheese?

Speaker 1: No. What is the reliability of this transportation network? I need to get from point A to point B because again, as I said, you know...

Speaker 2: Within the city?

Speaker 1: Within the city. There's also an element which looks at intercity connectivity as well.

Speaker 2: Yeah, this is...to what extent...people, goods and...

Speaker 1: Services.

Speaker 2: Yeah, I would say I don't know. It varies on your [social] class, I mean, if you're using public transportation, it's very difficult. Some people suffer a lot and we're [the city] dealing with it -and the government is doing something about it, I mean actively. If you're dealing with my [social] class which represents the top 3% of the city, of course it's accessible; I have a car and travel. So this one goes between two and five, if two being - I'm going to ignore even these headings and say, if two being okay and being excellent depending on class.

Speaker 1: So I need maybe to segregate this question by social classes?...

Speaker 2: If you're wealthy and you have a car and you know, is transportation easy, accessible, yes. If you are using public transport... then maybe not so much...

[Phone conversation]

Speaker 2: I made a mistake. This is number 25, it's the one that's minus 27 which is also number 24.

Speaker 1: I think 24 and 25 are similar. It's about the **[inaudible 0:57:28]**

Speaker 2: Yeah, and 26 is, depending on your...

Speaker 1: Economic...

Speaker 2: Socioeconomic... yeah, it depends on socioeconomic [situation]...

Speaker 1: Situation.

Speaker 2: Situation. Online, very limited.

Speaker 1: So, 27

Speaker 2: No no, I circled business.

Speaker 1: Oh,

Speaker 2: Spelling...So they cannot, we don't have access to online, it's very limited. Online is very limited.

Speaker 1: Oh, okay.

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Speaker 2: You see, this is a weird response because I would say this is to what extent can citizens access.

Speaker 1: Okay

Speaker 2: But here yes we can.

Speaker 1: Okay.

Speaker 2: No we can't, so...

Speaker 1: Okay so you're somewhere between 1 and 2 here. So well if you have to look at the options...

Speaker 2: I mean number 27, I would say businesses have access.

Speaker 1: Okay, so simple classes.

Speaker 2: Depends on the class and their access to internet.

Speaker 1: Okay.

Speaker 2: I'm being recorded, right?

Speaker 1: Yes.

Speaker 2: 28, no, no, no, yes, so 1, 28 - 1, nothing's been done to make it accessible.

Speaker 1: But the government is the internet provider?

Speaker 2: It is but they've made no effort.

Speaker 1: Okay.

Speaker 2: They have made no effort to meet to specific providers or provide access to community, nothing's been done. 29...

Speaker 2: No, well I don't know.

Speaker 1: Maybe it's better to write your review.

Speaker 2: Sorry, I am so sorry. One not sure, not enough. Apple is the king of user friendly...

Speaker 2: We just can't count on staff these days, they all are just horrible these days. 29, is done, yes so this one not sure. Number 2 not sure, Number 3, oh no.

Speaker 1: So you're somewhere between...

Speaker 2: No, between not sure, not enough and no opinion. I'm between not sure, not enough and no opinion. Number 30...

Speaker 2:

Speaker 2: I think its 4, no its 2, 3, 4.

Speaker 1: Okay, wherever you can indicate.

Speaker 2: Yeah, 2, 3, 4, a lot is being done and done earnestly. It's not like, it's genuine.

Speaker 1: So then you are at the top level.

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Speaker 2: Oh yeah, this time they take pride in managing tribal issues. Number 31, so sorry, we should not have come here, you know that. I am probably the worst interviewer you've ever met.

Speaker 1: It shows that you're also a very appropriate person to interview because of the links that you have within various groups...

Speaker 2: You sure know how to package things.

Speaker 2: You'll make it, since I am not going (laugh). Here like number 31, no, things have been done, definitely so I'd go here but not Braille, but definitely multi-lingualism, but not Braille

Speaker 1: Okay alright good but sometimes people don't think about Braille.

Speaker 2: I don't think Braille is a big promoted thing, I'd say there and three, so half of three,

Speaker 1: Okay, so 2.5.

Speaker 2: No it's not being done, so not four. Yes it's not being done, so 32... Yeah, no opinion.

Speaker 1: Okay.

Speaker 2: Yeah no opinion so 33. Yeah I don't know that, I don't know the education industry.

Speaker 1: So no opinion then?

Speaker 2: Nothing's been done there. 35, I am sorry I wrote all over this. So 1. So 36, then 37... Yeah 37, Okay what's next?

Speaker 1: Okay if you... alright great. So, this is what I showed you... Okay. So these are the Post 2015 Development Goals, so they have them under these headings - environmental sustainability, peace and security, this includes things like gender based violence, inclusive economic development so basically you know right to work opportunities, then inclusive social developments, access to shelter, housing, education, etc. So here my question is – in each of these, I was asking initially for 3 areas that you think are of concern, what you think might be the big area within each of these?

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]?

Speaker 1: No I really appreciate you taking the time for the interview.

Speaker 2: No worries, my pleasure.

Speaker 1: So I'll just wrap all this up. I'll send it to you later. Okay thanks again, so I will send it to you later.

Speaker 2: Brilliant. Is the Internet not working? Do you need a ride?

Speaker 1: Any other thoughts you might have on the questionnaire?

Speaker 2: What confuses you between the content between the four areas, sometimes it's not about from weak to high, it's different content, so in many cases it may be 1 and 4 or 3 and 2 or...

Speaker 1: But I think it also depends on which country...

Speaker 2: It also varies, yeah.

Speaker 1: Thank you once more!

[End of transcript]

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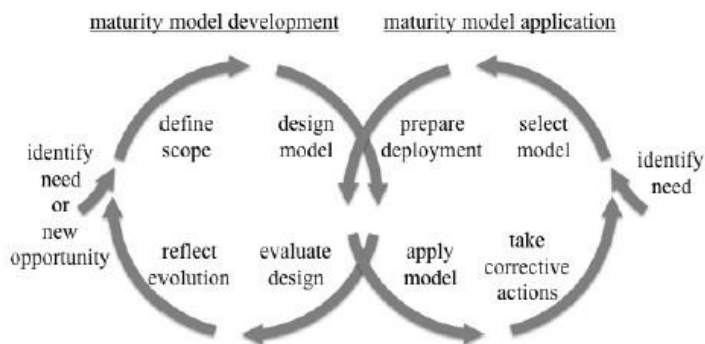


Figure 4. Two sides of the same coin? Phases of maturity model development and application.

Phase	Decision parameter	Characteristic			
Define scope	Focus / breadth	General issue		Specific issue	
	Level of analysis/ depth	Group decision-making	Organisational considerations	Inter-org. considerations	Global & societal considerations
	Novelty	Emerging	Pacing	Disruptive	Mature
	Audience	Management-oriented	Technology-oriented	Both	
	Dissemination	Open		Exclusive	
Design model	Maturity definition	Process-focussed	Object-focussed	People-focussed	Combination
	Goal function	One-dimensional		Multi-dimensional	
	Design process	Theory-driven	Practitioner-based	Combination	
	Design product	Textual description of form	Textual description of form and functioning	Instantiation (assessment tool)	
	Application method	Self-assessment	Third-party assisted	Certified professionals	
	Respondents	Management	Staff	Business partners	Combination
Evaluate design	Subject of evaluation	Design process	Design product	Both	
	Time-frame	Ex-ante	Ex-post	Both	
	Evaluation method	Naturalistic		Artificial	
Reflect evolution	Subject of change	None	Form	Functioning	Form and functioning
	Frequency	Non-recurring		Continuous	
	Structure of change	External / open		Internal / exclusive	

Table 1. Decision parameters during maturity model development.

Phase	Decision parameter	Characteristic			
Select model	Origin	Academic		Practitioner-based	
	Reliability	Untested	Verified	Validated	
	Practicality	General recommendations		Specific improvement activities	
	Accessibility	Free		Charged	
	Design mutability	None	Form	Functioning	Form and functioning
	Application method	Self-assessment	Third-party assisted	Certified professionals	
Prepare deployment	Driver / Responsibility	Business		IT	
	Realisation	Informal appraisal		Formal assessment project	
	Application area	Specific entity		Multiple entities	
	Respondents	Management	Staff	Business partners	Combination
	Training	None	Basic	Extensive	
Apply model	Execution	Go		No go	
	Frequency of application	Non-recurring		Repeated	
Take corrective actions	Target setting	Uncoupled		Coupled	
	Implementation	On the fly		Project	
	Implementer	Line organisation	Staff organisation	Externals	

Table 2. Decision parameters during maturity model application.

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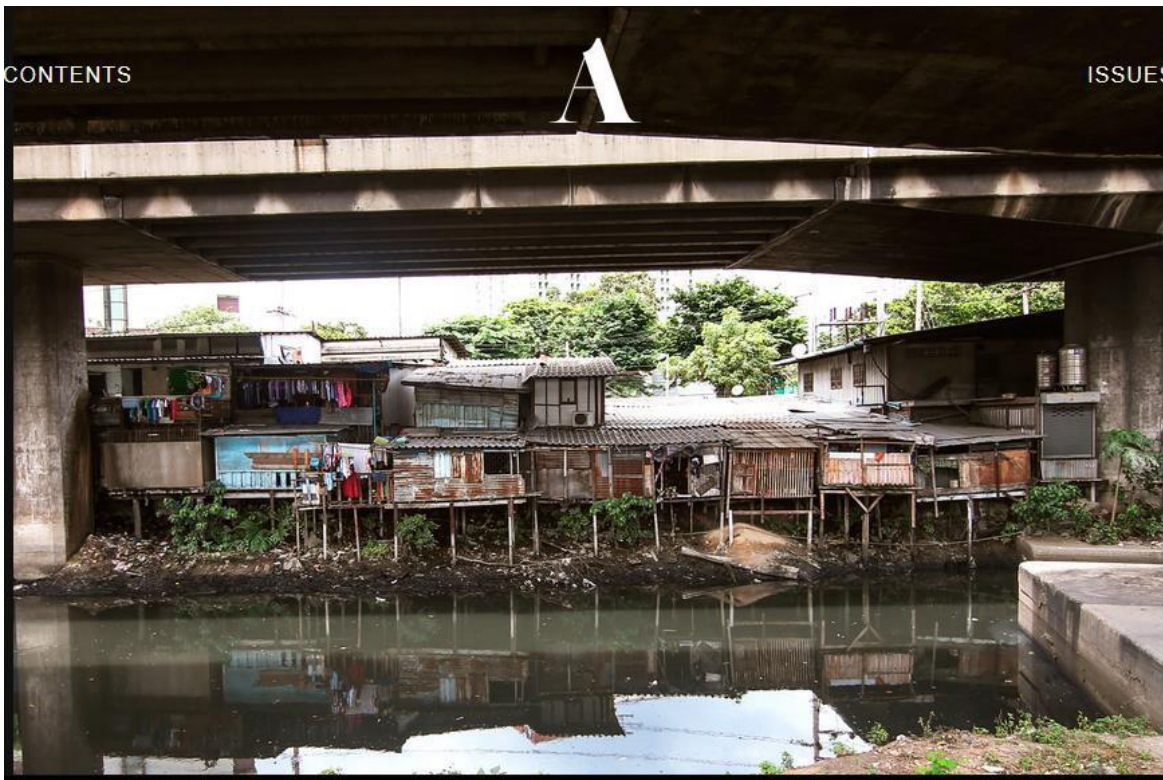
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