Framework of Malaysian Knowledge Society: Results from Dual Data Approach

Norsiah Abdul Hamid and Halimah Badioze Zaman

Abstract—This paper outlines the research conducted to propose a framework of 'Knowledge Society' (KS) in the Malaysian context. It is important to highlight that the emergence of KS is a result of the rapid growth in knowledge and information. However, the discussion of KS should not only be limited to the importance of knowledge, but a holistic KS is also determined by other imperative dimensions. This article discusses the results of a study conducted previously in Malaysia in order to identify the essential dimensions of KS, and consequently propose a KS framework in the Malaysian context. Two methods were employed, namely the Delphi technique and semi-structured interviews. The modified Delphi involved five rounds with ten experts, while the interviews were conducted with two prominent figures in Malaysia. The results support the proposed framework which contains seven major dimensions in order for Malaysia to become a KS in the future. The dimensions which are crucial for a holistic Malaysian KS are human capital, spirituality, economy, social, institutional, sustainability, and driven by the ICT.

Keywords—Malaysia, Knowledge Society, Framework, Delphi Technique, Interview.

I. INTRODUCTION

IN February 1991, the Malaysian government launched a long-term project called "Vision 2020" which laid out a plan towards building a fully developed and knowledge-rich Malaysian society by the year 2020 through the development of the ICT sector and the use of ICT to increase global competitiveness [1]. This mega project has led to the ICT initiatives such as Multimedia Super Corridor (MSC) based on a framework of National IT Agenda (NITA). NITA is a guideline to achieve the value-based Knowledge Society (KS) in the year 2020. Figure 1 shows the framework of National IT Agenda (NITA) proposed by the Malaysian government where the centre of the triangle is the target of the framework.

Today, societies are no longer depending totally on the resources such as land, labour and natural resources, but rather complemented by knowledge. Literature has also confirmed that our society is now living in the age of knowledge, in which knowledge is the most critical resource, and it becomes the most important commodity for productivity [2],[3],[4],[5],[6],[7],[8] and major contributor towards

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economic and social growth [9],[10]. However, knowledge could not be considered as the sole contributor towards the development of human society. There are still some other determinants for development which will be discussed further. This paper discusses a study which attempts to propose a 'Knowledge Society' framework in the Malaysian context. The study was conducted in Malaysia to identify the major dimensions that constitute a holistic Malaysian KS and consequently to propose the framework.
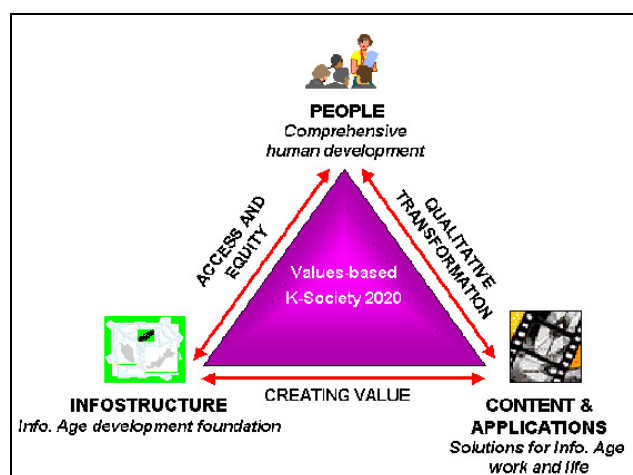

Fig. 1: National IT Agenda (NITA)

II. RELATED WORK

Although numerous researches and documents at the international, regional and national levels have discussed and debated about the KS, there has been little effort in defining what a KS is and no agreement about what it means has yet to achieve [10]. Moreover, it was difficult to understand or evaluate something that does not have a unified definition [11]. In the Malaysian context, the focus is given mainly on the concept of Knowledge-based Economy (KBE) [12]. In contrast, there has been no evidence that the Malaysian government has put any effort to define a KS concept and develop a KS framework. The only definition is a 'working definition' of KS by the NITC [13]. The definition of KBE was proposed in the '*Knowledge-Based Economy Master Plan*' by the Institute of Strategic and International Studies (ISIS) Malaysia [14]. The given K-based Economy definition is *"an economy where knowledge, creativity and innovation play an ever-increasing and important role in generating and sustaining growth"* (p.2). [15] states that the rapidly growing literature about future KS provides a very unclear and confused picture as to precisely what these visionary conceptions entail, how they will be implemented and what

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the real effects might be. Since there is no agreement or consensus on what KS means, it is difficult to decide if our society is becoming a KS and what the main characteristics of such society are [10]. This issue would be an obstacle to the ongoing effort of becoming a developed nation in the year 2020.

Based on the literature reviewed, there are few definitions of KS which have been proposed or used by researchers or organisations (refer Appendix). These definitions are studied in order to suggest major dimensions that constitute the Malaysian KS framework. Most of the definitions acknowledged the importance of knowledge as the most crucial in the development of a KS and the potential role of knowledge in enhancing society. Some of them highlighted the human capital dimension, some on the knowledge sector while others stressed on the infrastructure and ICT. However, despite the many existing definitions of KS, none suit the Malaysian society accordingly, as they did not cover a holistic perspective of Malaysia. It is important to note that Malaysia is a multi-ethnic and multi-religious country, and Islam is declared as Malaysia's official religion. Therefore, the government has put an emphasis on the principle of "Believe in God" as important and is placed first in the National Principles (Rukunegara). The development of KS in Malaysia needs to take into account the whole country as one society, where different ethnics share their cultures, beliefs and values, and can tolerate with others' religious, cultures and beliefs. The inclusion of spirituality in the Malaysian KS is essential because faith and belief in God is a foundation for each Malaysian citizen to guide them in their lives. This runs parallel to the fourth challenge of the Vision 2020 which states that *"the challenge of establishing a fully moral and ethical society, whose citizens are strong in religious and spiritual values and imbued with the highest of ethical standards"* [16].

Economic and social dimensions are also important for the Malaysian KS. [17] stressed that KS can be viewed by social and economic perspectives and it involves knowledge and learning infrastructure and strategies, plus emerging technologies. Institutional is also crucial in the development of a KS since the government plays an important role in implementing the policy. This dimension involves an open and participatory approach based on equity and non-discrimination, justice and solidarity of the society [18]. This is also emphasised in the National Mission of Malaysia 2006-2020 [19] and in the Knowledge Assessment Model [20]. Institutional in the context of this discussion includes the regulation, political aspect of a nation, freedom of information, and the participation of all citizens in policy making. Sustainability is another important dimension that should be considered in the development of a Malaysian KS. As stated by [21], creation of system of indicators for sustainable development is an important goal of each country. [21] also argued that it has been widely accepted that the traditional measures of economic welfare, such as GDP or per capita incomes, can provide only an incomplete picture of how well we are doing, but there remains other important dimensions i.e. sustainability and environment.

In the Ninth Malaysia Plan (9MP), focus has been set on the Second Phase towards Vision 2020 (year 2006-2020) that views the aspect of *human development* to optimize the *physical development* (in terms of facilities which could contribute to the economic and social development). The physical development has received much emphasis during the First Phase of Vision 2020 (year 1996-2005) [22]. For that reason, it should emphasise on the technological part, especially the ICT. Hence, a measurement which can triangulate the human dimension and physical aspect is needed so that the plan and implementation towards achieving Vision 2020 will run parallel to its objectives. Most of the extant models or framework of KS are primarily limited to only technological perspective and lacked the people [human] perspective [23],[24]. Another problem is that the existing measurement of ICT tends to view the ICT from the technological perspective and access to them as ends, rather than as enabling tools [25]. The generation, dissemination and effective use of information are becoming critical factors in the dynamic of society. This trend gained impetus in the decades following, and has given rise to the idea of the 'knowledge society' [25]. Therefore, KS needs to take into account not only the means (technologies) to move it, but also the ends - a (value-based) human capital development to make it effective [25].

III. METHODOLOGY

Two different methods were employed in order to identify the important dimensions of Malaysian KS and thus to propose the framework. The methods are the modified Delphi technique and the semi-structured face-to-face interviews. All the respondents and informants of this study were experts in the field of KS, ICT and Malaysian policies.

The Delphi Technique

The first stage of the study involved a five-round modified Delphi technique which took about ten months to complete. Since there are no general rules of thumb for creating the panel of experts [26], the criteria on experts' selection were based upon their expertise, reputation and diverse perspectives on the subject matter, academic qualification, research and publication, and also peer-to-peer nomination using a snowball technique. The snowball technique [27] was employed to generate subsequent participants of the Delphi panel [28],[29]. Since expert opinion is sought, a purposive sampling is necessary where people are selected not to represent the general population, but rather their expert ability to answer the research questions [30]. Twenty experts were initially invited to participate in the panel. However, only ten experts agreed to join the panel, comprising eight local experts and two from abroad.

The Delphi study involved three dimensions which were identified during the literature review process. The dimensions are human capital, knowledge and ICT. In this study, five rounds were employed to achieve the objective of the study. This is because this study began with an open-ended and unstructured questionnaire in Round One to yield ideas and opinions from the panel of experts. In Round One, the

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researcher proposed an initial definition of Malaysian KS and asked the experts to give comments on the definition and their suggested elements to be added. This round has elicited many key words, phrases and ideas to help in the development of the framework. The following rounds (Rounds Two to Four) were conducted to identify the important items of the dimensions by using the median and inter-quartile scores. The last round (Round Five) was used to verify the final definition of KS.

The Semi-structured Interviews

The second stage of the study employed the semi-structured face-to-face interviews which took two months to complete. Two prominent figures in Malaysia have been identified as potential subjects for the interviews. They are the key policy-makers behind the Malaysian projects of achieving the KS in the future. One of them used to hold the highest post in the Malaysian government, and the other one is directly involved with the Malaysian policy-making and policy-implementation of the KS. Letters of intent were sent to both experts and they agreed to be interviewed. The interviews were conducted separately, and the data were analysed using thematic analysis and coding [27].

IV. Results and Discussion

It is important to note that the Delphi study only involved three dimensions which are human capital, knowledge and ICT. However, throughout the Delphi study and the results of the interviews, other four important dimensions have been revealed to be included in the Malaysian KS framework to make it comprehensive and holistic. The results of the Delphi study and the semi-structured interviews are discussed below.

The first round of the Delphi involved the development of questionnaire and an initial definition of a Malaysian KS. Rounds Two to Four were conducted to get the median and inter-quartile scores of items from three dimensions, namely knowledge, human capital, and ICT. Results of all the items show high consensus on the three dimensions and thus support the argument that the three dimensions are important to the Malaysian KS. Also at these stages, few other dimensions evolved based on the experts' opinions, namely spiritual, economy, and social. Later on, the sustainability dimension evolved in the interview sessions. Results from the Delphi study and the interviews revealed that there are seven important dimensions that need to be addressed in order for Malaysia to become a KS. All the dimensions are discussed in detail below.

Knowledge and Human Capital

These two dimensions are combined together in this study as the two are inter-related. In the interview with the Expert A, he stated that the Malaysian KS should be defined in its own way and the target to become a developed country by the year 2020 is stressed on 'its own mould', and not to simply follow the definition by other developed countries. Expert A emphasised that the Malaysian KS can be achieved by the knowledge and human capital itself. To quote Expert A, "*...what we mean by KS is a society that is highly educated in the modern knowledge... which will contribute towards his*

capacity to improve his quality of life. So the moment he improves his knowledge, he is in the position to improve his quality of life." He further stressed that "*...human development actually involves also knowledge of the workings of society.*" The second interview with Expert B, supports the argument of Expert A. She stated that the Malaysian KS is basically aiming for a developed Malaysian nation that is mature in every sense, politically, socially, economically, culturally, environmentally, thus a very holistic perspective and vision. Expert B also opined that "*...knowledge is an input. You use knowledge to produce something, a better way of life, solutions for different challenges or problems. ....In order to have knowledge, you need to develop your human capital. Of course you need infrastructure, you need other support systems to sustain the KS. But you need to have your human capital developed before you can do anything productive, or to sustain growth, or to grow in a sustainable way.*" All the statements pertaining to the knowledge and human capital support the earlier findings of the Delphi that both dimensions (knowledge and human capital) are crucial in the development of the Malaysian KS.

Spirituality

This dimension was initially being proposed by one expert in the Delphi. He emphasised that "*...if we include perennial knowledge...then human actors may achieve the kind of wisdom that not only fulfils the criteria for success on earth, but also in the hereafter. Our constitution, Rukunegara and Vision 2020 all speak about our belief in God and the need to have a moral and ethical society.*" This is supported by the findings of the interviews. Both experts emphasised on the importance of spirituality in the Malaysian KS as it would be the major distinction between the Malaysian and other existing models of KS. To quote Expert A, "*It's not just a matter of per capita income, and GDP, but it is also the quality of the person, or the character of the person and this is influenced by his spiritual input into his life...we have seen how materialism contributes to...the destruction of human society*". Expert B also stressed that in order to become a holistic KS, there should be emphasis on the spirituality dimension. To quote her, "*...if you don't aim for that (spirituality), if you pursue only economic growth, you would have gaps in development. And you may have moral problems that you cannot address, environmental degradation that you cannot address, corruption, etc. So you need to address development in a holistic way.*" Expert A also commented that "*...a person maybe very well educated in Physics for example, but if he has no spiritual input, he is going to behave differently. He can become a criminal. A person with knowledge, can either become a criminal or a good citizen, depends on his value system.*" The statements proved that the spirituality dimension is needed in the development of Malaysian KS, and therefore should be included in the framework. This is also in line with the NITA framework which targets to achieve the value-based KS by the year 2020.

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ICT

With regards to the importance of ICT, both experts agreed that ICT plays a crucial role in the development of KS. As being stated by Expert A, "*...if a society has the ability to acquire knowledge, it can become a KS, because the knowledge acquisition can be achieved through book readings, talks or lectures. But if the society has the ICT facilities, it will have access to unlimited knowledge and therefore enhance the knowledge*". He further said, "*...ICT is an enhancer. It increases and enhances your capacity to use knowledge. ...with ICT, you are many steps ahead of those who depend only upon books, reading, and lectures to get knowledge*". This is also supported by the respond of Expert B who believed that ICT would help the distribution of knowledge to the entire mass. She clarified that "*the pockets of knowledge communities of the past are from the privileged class....but with ICT, you democratise access to knowledge, its creation and dissemination. You have the opportunity to have inclusive knowledge societies of a far wider scale, which can really be society-wide.*" These statements provide the fact that ICT can help to facilitate the distribution of knowledge to the entire Malaysians.

Economy and Social

These two dimensions have been derived from the Delphi study. In Round One, few experts emphasised the need to include both dimensions in the Malaysian KS. Although it was not mentioned directly in the interviews, both experts also highlighted the importance of economic and social dimensions. As stated by Expert A, "*...we want to be economically somewhere within the range of per capita income of the developed countries..*", while Expert B claimed that "*...It is basically aiming for a developed Malaysian nation that is mature in every sense, ...socially, economically, ...very holistic perspective and vision.*" Furthermore, it is also important to quote Expert B, "*Knowledge Economy (KE) is a subset of a Knowledge Society (KS). You cannot have a KE functioning perfectly without having some aspects of the country or its people that are able to manage a KE.*" In addition, these two dimensions are needed for all human beings to function effectively in their lives.

Institutional

This dimension derived both from the Delphi and the interviews. In Round One of the Delphi, one expert suggested the regulatory aspect to be included in the framework of Malaysian KS, which also includes the political aspect of a nation. Meanwhile, in the interview, one expert also stressed that the KS is "*a developed Malaysian nation that is mature in every sense...including politics*". This is inline with [18] which suggested a KS to constitute an open, participatory approach based on equity and non-discrimination, justice and solidarity.

Sustainability

In the interviews, both experts emphasised the need to view KS in a sustainable way. Expert A proposed that "*...Sustainability is sustained by the combination of your knowledge and your value system. ...If we have this quality, this knowledge plus this quality of good value system in our culture, it will be sustained*". This indicates the sustainability in terms of the achievement. Likewise, Expert B believed that "*...the goal for every human society is sustainable development and growth. You want to be able to co-exist in harmony and to be able to live sustainably.*" Therefore, the dimension of sustainability is also regarded as crucial in the Malaysian KS.

V. PROPOSED FRAMEWORK FOR MALAYSIAN KS

The review of literature reveals that there are a number of variables that determined the KS. This is supported by the results of the Delphi study and the two semi-structured interviews with the experts. Therefore, it should be noted that for the scope of the Malaysian KS, it is important to consider seven dimensions, which can be referred to in Figure 2. The framework for the Malaysian KS comprises seven dimensions, specifically the input from human capital (including knowledge), spiritual, economy, social, institutional and sustainability. The ICT is considered as another important dimension but its role is as a driver to fast facilitate the development of KS. Finally the outcome of the framework is definitely a holistic Malaysian KS which covers all aspects of human living.
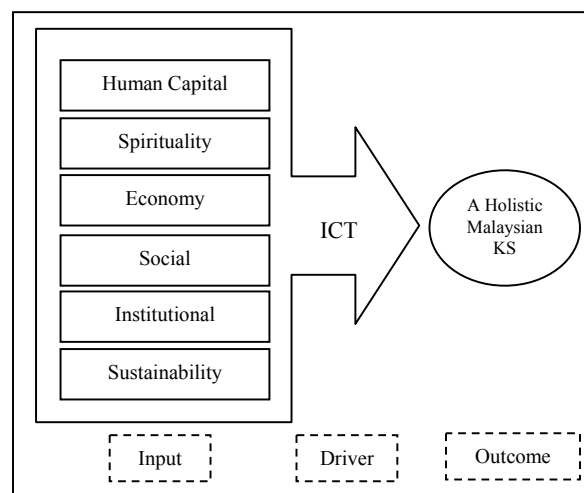

Fig. 2: Proposed Framework for Malaysian KS

VI. CONCLUSION

This article has highlighted the recent study done in Malaysia to propose a Malaysian knowledge society framework. Two different methods were employed, which are the Delphi technique and semi-structured interviews with experts. The Delphi study is adopted to define the concept of Malaysian KS and to identify the important dimensions of a Malaysian KS. The interviews were conducted to support the findings from the Delphi and to get an in-depth knowledge on the concept of the Malaysian KS. Results from both methods revealed that the seven dimensions are the most important in the Malaysian KS. The dimensions can be divided into two, namely input and driver. Input are from human capital (including knowledge), spiritual, economy, social, institutional and sustainability while the ICT is the driver to

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facilitate towards achieving KS. The outcome of the framework is a holistic Malaysian KS.

VII. APPENDIX

Some Existing Definitions of KS

Knowledge society is about creating, sharing and using knowledge to bring prosperity and a sense of well-being to its people [5].

Knowledge society is a society that operates within the paradigm of the economics of information. It values human capital as the prime input to production and innovation. A knowledge society is well connected via modern ICTs to the dematerialized economy, and has access to relevant and usable information. A highly sophisticated physical infrastructure underpins this economic model and allows the delivery of material objects that are accessed and manipulated in the dematerialized world of modern ICTs [7].

Knowledge society is a society that operates within the paradigm of the economics of information. Human capital is valued as the highest asset and is seen as the prime input to production and innovation. The creation of knowledge (content) is a unique feature of a knowledge society. As such, a knowledge society is underpinned by a well developed information as well as physical infrastructure allowing participation in the different socio-economic and political activities [8].

Knowledge society is a society in which the knowledge sector represents the most significant share of the economy. The knowledge sector is defined as the aggregate of industries whose main function is to produce the goods or services within the value-added chain of knowledge, irrespective of the kind of technical means used [10].

Knowledge society is a new strategic position of our society where the social and the economic perspective is concentrated on the exploitation of emerging technologies, and well-defined knowledge and learning infrastructures are the main vehicles for the implementation of knowledge and learning strategies. The final milestone is a society with access to knowledge and learning for everyone [17].

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 [31].

Knowledge society is about the adoption and application of Internet technologies throughout all society, i.e. government and public service (e-Government), the Information Society/general public, and the enterprise sector, with a high degree of interdependence between the three [32].

Knowledge-based society is one where knowledge diffusion, production and application become the organizing principle in all aspects of human activity: culture, society, the economy, politics, and private life [33].

REFERENCES

[1] United Nations Development Programme. *Creating a development dynamic: Final report of the digital opportunity initiative*. Accenture, Markle Foundation, United Nations Development Programme 2001. Available: http://www.opt-init.org/framework/pages/es.html.

[2] P.F. Drucker, *Post-Capitalist Society*. New York: HarperCollins. 1993.

[3] P.B. Evans, and T.S. Wurster, Strategies and the new economics of information. *Harvard Business Review* (September):71-82. 1997.

[4] H. Evers, Towards a Malaysian knowledge society. Paper read at The 3rd International Malaysian Studies Conference (MSC3), 6-8 August 2001, Bangi, Selangor. 2001.

[5] S. Al-Hawamdeh and T.L. Hart, *Information and Knowledge Society*. Singapore: McGraw-Hill. 2002.

[6] M. Clarke, e-Development? Development and the new economy. In *UNU World Institute for Development Economics Research, Policy Brief No. 7*. Helsinki: United Nations University. 2003.

[7] J.J. Britz, P.J. Lor, I.E.M. Coetzee and B.C. Bester, Africa as a knowledge society: A reality check. *The International Information & Library Review,* 38:25-40. 2006.

[8] P.J. Lor and J.J. Britz, Is a knowledge society possible without freedom of access to information? *Journal of Information Science,* 33 (4):387–397. 2007.

[9] N. Stehr, *Knowledge societies*. London: SAGE Publications. 1994.

[10] D. Rohrbach, The development of knowledge societies in 19 OECD countries between 1970 and 2002. *Social Science Information,* 46 (4):655-689. 2007.

[11] M.K. Adams, *Defining creative scholarship and identifying criteria for evaluating creative scholarship using a modified Delphi technique*. Doctoral thesis, Graduate School, University of Wyoming, Wyoming. 2004.

[12] A. Abdul Rahim and J. Zulikha, *Agenda ICT ke arah pembangunan k-ekonomi Malaysia*. Sintok: Penerbit Universiti Utara Malaysia. 2005.

[13] T.M.A. Shariffadeen. *Existing definition of knowledge society*, 8th Jan. 2009. Personal communication via email. 2009.

[14] Institute of Strategic and International Studies Malaysia. *Knowledge-based economy master plan*. Kuala Lumpur: ISIS Malaysia. 2002.

[15] W.H. Melody, Toward a framework for designing information society policies. *Telecommunications Policy,* 20 (4):243-259. 1996.

[16] M. Mohamad. *Malaysia: The way forward*. Kuala Lumpur: Centre for Economic Research & Services, Malaysian Business Council. 1991.

[17] M.D. Lytras and M.A Sicilia, The knowledge society: A manifesto for knowledge and learning. *International Journal of Knowledge and Learning,* 1 (1/2):1-11. 2005.

[18] J.H., Spangenberg, R. Mesicek, A. Metzner, and F. Luks. Sustainability indicators for the knowledge-based society: Measuring the sustainability of the information society. *FUTURA*, 85-95. 2002.

[19] Prime Minister's Office of Malaysia. The National Mission 2006-2020. http://www3.pmo.gov.my/RancanganWeb/Rancangan1.nsf/Misi Nasional Eng?openForm. 2006.

[20] World Bank. Knowledge assessment methodology. http://web.worldbank.org/WBSITE/EXTERNAL/WBI/WBIPROGRAM S/KFDLP/EXTUNIKAM/0,,menuPK:1414738~pagePK:64168427~piP K:64168435~theSitePK:1414721,00.html? 2008.

[21] A. Kovačič, Sustainable development and the problems of measuring. *World Academy of Science, Engineering and Technology,* 30:83-91. 2007.

[22] Economic Planning Unit Malaysia. *Penyediaan Rancangan Malaysia Kesembilan (RMK9)*. Available: http://www.epu.jpm.my/New%20 Folder/RMKe9%20presentation%20Approved.pdf. 2005.

[23] Y. Malhotra, Measuring knowledge assets of a nation: Knowledge systems for development. Paper read at "*United Nations Advisory Meeting of the Department of Economics and Social Affairs*", 4-5 September, New York. 2003.

[24] R. Ramachandran, Measuring knowledge development and developing official statistics for the information age. *International Statistical Review,* 71 (1):83-107. 2003.

[25] Communication Rights in the Information Society (CRIS). Is the 'information society' a useful concept for civil society? (1). Available: http://www.wacc.org.uk/de/content/pdf/641. 2002.

[26] D.S. Scheele, Reality construction as a product of Delphi interaction. In *The Delphi method: Techniques and applications*, edited by H. A. Linstone and M. Turoff. Reading, MA: Addison-Wesley Publishing. 1975.

[27] R.C. Bogdan and S.K. Biklen, *Qualitative research for education: An introduction to theory and methods*. 2nd ed. Boston: Allyn and Bacon. 1992.

[28] G.J. Skulmoski, F.T. Hartman and J. Krahn, The Delphi method for graduate research. *Journal of Information Technology Education,* 6:1-21. 2007.

[29] F.T. Hartman and A. Baldwin, Using technology to improve the Delphi method. *Journal of Computing in Civil Engineering,* 9:244-249. 1995.

[30] A. Fink and J. Kosecoff, *How to conduct surveys: A step-by-step guide*. London: Sage Publications. 1985.

[31] United Nations Educational, Scientific and Cultural Organization (UNESCO). UNESCO World Report: Towards knowledge societies. Paris: UNESCO Publishing. 2005.

[32] Forfas, e-Business Monitor Report. Available: http://www.forfas. ie/media/forfas031209_ebusiness_monitor.pdf. 2003.

[33] United Nations Development Programme (UNDP), *Arab Human Development Report 2003: Building a knowledge society*. Regional Bureau for Arab States, United Nations Development Programme. 2003.