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# Knowledge Networking across the Social Divide: A Model for Distributed Decision Making

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## Abstract

*As organizations become increasingly extended across global boundaries, their reliance on information and communication technologies to support their decision making processes increases. Given the narrowing of the digital divide these infrastructures for distributed decision making are becoming more prevalent. Knowledge networking appears to have transformed the nature of decision making through the integration of electronic networks with human networking to bring about collaborative strategies for the provision of goods and services. Such decision making processes are affected by the social divide that is dominated by migration, education and civic engagement issues. This paper investigates how processes of knowledge networking enable distributed decision making to take place in the context of development. It considers vignettes in as they relate to how knowledge networking and the social divide to enable global capability sourcing strategies to be accomplished. Following an analysis of these vignettes, a model of distributed decision making is provided that illustrates how these processes enable global capability sourcing strategies to be implemented.*

**Keywords:** Knowledge networking, Social divide, Distributed decision making, Digital divide

## Introduction

It appears that the rise of distributed processes among people and organizations in different parts of the world are providing new challenges for decision makers (Qureshi et al 2006). The notion that organizations have become extended across geographical boundaries has meant that decision making processes are dependent upon information and communication technology to offer an environment that provides reliable and timely task-related information sharing and a support for rapid decision-making (Zigurs & Qureshi 2001, Baker 2002). Baker's (2002) study found that for virtual teams, the addition of video to audio-based communication can result in improved decision making when compared to other collaborative technologies. As the business processes are performed by various enterprises, the management of the value-chain is a complex task, especially when some degrees of coordination are envisaged for support (Pereira *et al.* 2001). At the same time, there is a divide affecting the ability of people to access the opportunities offered by the information highway. There is a sense that those who have access to this highway are connected to the resources they need to better their lives. Issues of the Digital Divide have been plaguing International development agencies as well as researchers in the development arena for a long time. Reports from the United Nations as well as the World Bank have pointed out issues relating to exclusion of populations from knowledge intensive economies that emphasize on know-how rather than the traditional perspectives of land and capital as the core components of an economy (UNDP 2003, World Bank 2003, Norris 2001). A World Bank study found that 90% of the world's internet subscribers are in countries whose population is only 15% of the global total (Dasgupta et al. 2004).

The rise of globally distributed decision making processes is coupled with the narrowing of the digital divide. Evidence from recent studies show that this digital divide is closing rapidly and is bringing to light a more profound divide: that of the social gap between those who have access to the basic social services such as education and their effects on development of communities that are often rural. In order for the social divide to be addressed, issues relating to access to education, information literacy and civic engagement (Norris 2001) affect the level of empowerment that can be achieved through knowledge networking. Perspectives about issues such as migration, IP and labor laws affect the extent to which knowledge networking can bring about development. It is seen that when knowledge networking is put into action, the social divide can be closed and incomes increase (Easterly 2006, Fishman 2006). Keen (2007) takes a view of the Digital Divide that is very different from the orthodox perspectives of others in the field of development. He says that the key issue for enhancing growth of a country has to do with self-development of a country's talent pools and that the simplistic view of infusing ICTs is not the answer. His core argument is that the main issue for bypassing the Digital Divide is how to leverage the resourceful, inventive and energetic talent pools of poor countries so that they can be innovators on their own behalf and help their families and communities live a better life. And so the Digital Divide needs to be addressed from a social rather than a technological innovation standpoint.

Within the context of a narrowing digital divide, distributed decision making is seen to be a complex process entailing diverse stakeholders (Courtney 2001, Simon 1979). Initiatives in sustainable development have fueled a change in thought from structured problem solving to a broader more collaborative perspective which requires input from a set of stakeholders distributed across different geographical locations. In this, the role of knowledge networking has become an essential component for bringing together the diverse stakeholders who work together in distributed decision making processes. This is consistent with Churchman's perspective which views knowledge as a system of inquiry through which stakeholders interact to resolve decision problems (Courtney 2001, Churchman 1971). With increasing globalization, developed countries are looking to developing countries to cater for their knowledge resources (Sen 1999, Keen 2007). As extended enterprises expand their decision making processes, the need to network knowledge becomes more prevalent. Social capital lies at the heart of knowledge networking as social networks enable communities-of-communities to be formed and create a means for connecting the missing link between the information rich and information poor populations. Knowledge networking is activated by talent pools. ICT infrastructures have generally been designed independently of talent pools (Keen 2004, Qureshi and Keen 2005). Databases, PCs and software tools may or may not be adopted and used effectively but knowledge networking capabilities are activated by people with the needed interests, access and initiative. Now that the effects of globalization are permeating multiple facets of life, organization and society, the relevance of the effects of knowledge networking have become more apparent. Talent is distributed across space and time. This provides challenges for activating knowledge. Information systems that address talent pools are needed. Global information systems that encompass multiple geographic, cultural and functional requirements are being implemented and used to enable sourcing strategies that bridge developed countries with resources in developing countries and vice versa. The use of ICTs in this regard can enable these opportunities to be taken. However the presence of the social divide limits the ability of those who are able to communicate and use these resources from those who are not.

When knowledge networking is put into action, the social divide can be closed and incomes increase (Easterly 2006, Fishman 2006). Fishman (2006) explained the evolution of the Chilean salmon farming where he highlighted that the growth engine for the now-mature-industry was due to family-funded small and medium sized enterprises (SMEs) that essentially evolved through trial-and-error learning. The SMEs relied very heavily on knowledge networking via Missions to other counties, particularly Canada, the U.S and Japan, in search of technology and science. Keen (2007) pointed out that in the case of the Chilean salmon farming industry, self-development by local talent pools created a billion dollar industry from scratch in an area where there was no infrastructure, no experience, no proven demand, no ICT and no business case for any international funding organization to launch a major project. All it had was a talent pool. And so it is apparent from this case study that bridging the digital divide does not in and of itself achieve the same economic and social impact as the talent pools' self-development. The needed enabling transportation, shipping and trading infrastructures emerged from the Chilean innovation and did not precede it. In similar case studies in the expansion of ICT skills in Eastern Europe and medical tourism in Asia show, entire new segments of an otherwise stagnant economy are being created through talent pools suddenly getting access to ICT tools. These talent pools need ICT support to help it create growth and to leverage its innovation and effort. That ICT base is widely available. It needs to be mobilized through knowledge networking and the distributed decision making processes that come with it. The question being investigated in this paper is, how can knowledge networking enable the social divide to be bridged?

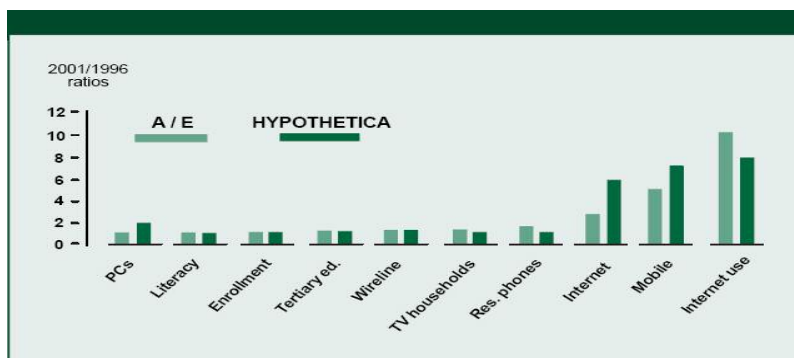
In this paper we investigate the ways in which knowledge networking can help bridge the social divide by specifically addressing how the issues that comprise the social divide such as income, literacy, and civic engagement can benefit from the processes of knowledge networking. The following sections develop a theoretical background for knowledge networking and how it enables distributed decision making to take place across a narrowing digital divide. This paper follows an interpretive research strategy through which knowledge networking processes are identified and used to inform the development of key concepts and relations in a model of distributed decision making.

## Theoretical Background

While distributed decision making relies on ICT infrastructures and collaboration technologies, it remains tied to the notion that there is a digital divide influencing the extent to which these processes can take place. The concept of the digital divide has been particularly pervasive in recent years because there is a sense that there is a gap between people who have access to ICTs and those who do not. There are various definitions to depict this divide. Servon (2002) points out that the Digital Divide is not simply a problem of access and that access is just one of the issues involved. Equally important aspects are those of IT literacy and content. The ability to use IT for a range of purposes and the knowledge of how and why IT can be used as a key resource is important in bridging the Digital Divide. In the same vein, content that meets the needs and demands of disenfranchised groups and content that is created by these groups are important considerations in narrowing the digital gap. Norris (2001) also describes the concept of the digital divide as a multidimensional phenomenon comprising of three distinct aspects. The *global divide* refers to the divergence of internet access between industrialized and developing societies. The *social divide* concerns the gap between information rich and poor in each nation. And finally within the online community, the *democratic divide* signifies the difference between those who do, and do not, use the panoply of digital resources to engage, mobilize, and participate in public life. It appears that these global, social, and democratic gaps affect

development. Traditional development literature suggests that there is a direct link between literacy, tertiary education enrollment, availability of personal computers and the digital divide (OECD 2001).

However, a recent global study of the digital divide has illustrated that the gap is rapidly decreasing. The Orbicom report (2003) studied the Digital Divide using three indicators, infodensity, info-use, and infostate. Infodensity refers to the portion of a country’s overall capital and labor stocks, which are ICT capital and ICT labor stocks and indicative of productive capacity and is operationalized in the study through the measurements of available infrastructure/networks and ICT skills. Info-use refers to the consumption flows of ICTs and is operationalized through ICT uptake (uptake corresponds to ICT goods) and ICT intensity of use (intensity of use corresponds to ICT services). The third and final indicator is infostate, which is the aggregate of infodensity and info-use and is considered to be the degree of a country’s “ICT-ization”. The report defines the Digital Divide as the relative difference in infostates among countries. The study utilized existing data on 192 countries for the measurements of networks (covering 99% of the population of the planet), 153 countries in skills and therefore Infodensity (covering 98% of the population), 143 countries in Info-use and 139 in overall Infostate (covering more than 95% of the global population). Results from the extensive statistical analysis performed reveal that, as much as Infodensity and Info-use accounted almost equally for the existence of the Digital Divide, they also accounted almost equally for its closing. The numbers showed that on average, between 1996 and 2001, Infodensity increased approximately by 74% and Info-use by 87%. Additionally it was observed that ICT networks and uptake accounted for most of the growth and that mobile networks and the Internet were attributed to most of the gains. This trend was more evident in the have-not countries than in the countries with higher Infostates. The core finding of the Orbicom study gives empirical evidence of the gradual progression of countries in closing the Digital Divide. Figure 1 below shows how individual factors contribute to the closing of the Digital Divide. The 192 countries in the study were categorized into five groups (A – E) and compared with a hypothetical country (Hypothetica) which recorded the average values for each of the indicators. It is clear from the chart that, much of the upward movement is accounted for by the use of the Internet, followed by mobile phones and Internet networks. And so, the same factors that account the most for the Digital Divide are also the ones that move more in the direction of alleviating it. Another interesting finding – that contradicts so many of conjectures in earlier Digital Divide studies - is that number of PCs and literacy do not play any significant role in contributing to the closing of the divide.



**Figure1. Factors contributing to the closing the Digital Divide. (Source: Orbicom Report, 2001).**

This suggests that there is more powerful force affecting the ways in which the information highway is being used to bridge the development divide. Qureshi (2005) in an interpretive study of multiple cases investigated the relationships that might be in play as we talk about IT and its impact on development. Qureshi (2005) points out that positive cycles of development come about when the effects from ICT implementations with the help of better tools and techniques will result in increased human development as well as improved macro-economic growth. It is seen that this also results in increased per capita income which then creates a ripple effect for improved social and economic development. Warschauer (2003) provides a rather different focus on the interplay between ICTs and the development divide by examining the ways in which varying access to technology contributes to social and economic inclusion. This focus on social inclusion shifts the discussion of the Digital Divide from gaps to be overcome by providing equipment to social development challenges to be addressed through the effective integration of technology into communities, institutions, and societies. Warschauer (2003) thus emphasizes that what is most important is not so much the physical availability of computers and the internet but rather people’s ability to make use of technologies to engage in meaningful social practices.

It appears that the key challenge faced by distributed decision making processes is not so much the digital divide but the social divide. International development agencies have come to recognize and show concern of a social divide – digital divide within societies. The internet has become increasingly central to life, work, and play by providing job opportunities, strengthening community networks and facilitating educational advancement. And so the exclusion of certain groups and areas such as poorer neighborhoods, working-class households, or rural communities are more important than ever. According to Norris (2001), the social divide has a number of components. Norris (2001) identifies household income, occupation, education, gender, and generational differences to be the key factors in play when talking about the social divide in internet access. Norris (2001) mentions that the heart of the problem of the social divide in internet access “lies in broader

*patterns of socioeconomic stratification that influence the distribution of household consumer durables and participation in other common forms of ICTs, as well as in the digital world.*” Norris (2001) also goes on to say that it is not necessarily true that all dimensions of the social divide will automatically close as internet access becomes more ubiquitous. Norris provides evidence from countries such as Sweden & the Netherlands where widespread new technologies exist but the gaps by education, income, and occupation still remain substantial.

A key component of the social divide is the development and access to social capital. Literature in the area of social capital has investigated the effects that it has on various segments of business activities and in the overall economy of communities. Some of the popular and widely used definitions in use today have been adapted from Bourdieu (1983) who refers to social capital as “the sum of the resources, actual or virtual, that accrue to an individual or a group of people by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition.” Working off Bourdieu’s definition of social capital, Coleman (1988) provides his perspective to the term by stating that “Social capital is defined by its function. It is not a single entity, but a variety of different entities, with two elements in common: they all consist in some aspect of social structures, and they facilitate certain actions of actors within the structure.” Lin (2001) provides a definition for social capital which states that “social capital is the investment in social relations with expected returns in the marketplace.” It is evident from these different definitions that social capital refers to the characteristic of social interactions and networks that can provide value added resources to a society. Impacts of social capital can be broadly classified as (i) Getting information (Granovetter 1973); (ii) Transfer of knowledge, innovation, and diffusion of technology or practices (Ahuja 2000; Brown & Duguid 1991); (iii) Combining complementary knowledge and helping solve problems (Greve and Salaff 2001; Von Hippel 1988); and (iv) Brokerage (Burt 2005).

In the context of world development, increasing importance of social capital is being recognized as a key component affecting the increase in incomes (Fine 1999). Acknowledgement of its importance has also come from the Organization for Economic Co-operation & Development (OECD) and the World Bank: *Trust [social capital] has a role in facilitating productivity...when embodied in the organizational culture of firms...and may lead to larger and more effective production units...as well as enhanced co-operation within firms. Social capital can facilitate regional systems of innovation...helps people to find jobs* (OECD 2001). Serageldin & Grootaert (2000) mention that, at any given time, every country has appropriate levels of social capital. And that over time the total composition of social capital should increase through accumulation. There have been a number of studies that have looked at social capital in the context of communities of practice (Wenger 1999). Steinmuller (2004) mentions that computer-mediated-communication and Information and Communications technologies (ICT) may help communities of practice to have enhanced capabilities of global sourcing of knowledge and problem-solving activities resulting in greater social capital. Steinmuller goes on to say that the social networks of communities of practice, help extend knowledge markets. In addition he states that changes in communities of practice impacted by ICTs may have implications for growth, competitiveness, and employment. The paper by Steinmuller (2004) lays out a number of potential policy suggestions of how communities of practice may improve economic growth for regions. Gaved & Anderson (2006) in a similar study looked at the role of local ICT initiatives on networked communities in several countries in the European Union (EU). One of the key recommendations that come out from their study is the issue that the local ICT initiatives need to “go up the citizens’ value chain” i.e. the chosen technology needs to address a community purpose in order for citizens within that community to utilize it. It is evident from the social capital literature that ICTs have a role to play in enhancing and promoting social capital within communities.

Knowledge networking brings about development by enabling people to connect using digital media. In order to develop an understanding of how knowledge networking takes place, an activation perspective is necessary in that it enables knowledge to be brought into action. Knowledge networking creates information and its exchange among talent pools. Qureshi and Keen (2005) suggest that knowledge activation is the “conversion of knowledge to action.” This is central to the networking of knowledge between disparate groups and individuals. The main idea behind knowledge activation is the process of discovering people with pertinent knowledge and utilizing it effectively through their keenness to provide, access, and share it when the need arises. This requires collaboration among people in different parts of the world. The Qureshi and Keen (2005) study has important implications for knowledge networking as the notion of knowledge activation through knowledge identities in a networked environment will enable individual’s knowledge to be brought into the collaborative arena. Knowledge activation thus enables improved knowledge networking among geographically dispersed communities and attempts to reduce the gap between the information- and expertise-rich communities and those that are poor in these resources. These decision making processes are not only distributed, they are collaborative and are activated through a demand for action.

In addition, Queau (2002) argues that a new culture is emerging of ‘information literacy’ through online interactions comprised of visual representations and mental images that can potentially increase the disparities between people who are part of this culture in industrialized countries and those who are not, as well as within societies themselves. This has implications for the level of civic engagement and level of participation in knowledge networking (Norris 2001, Giddens 2003). And so there is a dire need to come up with ways that would help reduce the knowledge disparities among communities within and among developing and developed countries. International development agencies recognize that in

order to bridge this divide between the information rich and information poor, knowledge networking needs to take place. Keen (2007) states that knowledge networking strategy is “one of accelerated development through pragmatic opportunism: its priority is to network two distinct groups: those looking for talent and aiming to source capabilities or products and services that their organizations need and those with talent looking for opportunities to find new spaces to apply their skills, build up their businesses and enrich their communities.” In the following section a methodology is developed to enable the key components of knowledge networking to be isolated as they relate to distributed decision making across the social divide.

## Methodology

According to Klein and Myers (1999) Information Systems (IS) research can be classified as interpretive if it is assumed that our knowledge of reality is gained through social constructions such as a language, consciousness, shared meanings, documents, tools, and other artifacts. Interpretive methods of research in IS are “aimed at producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context” (Walsham, 1995). Within this interpretive research strategy, a phenomenological approach is taken to identify and mine core components of knowledge networking from interactions resulting from electronic collaborations. This data represents the creation of shared understanding through intersubjectivity. According to Weick, intersubjectivity has two defining characteristics: 1) it emerges from the interchange and synthesis of meanings among two or more communicating people, and 2) the subject gets transformed during interaction such that a joint or merged subjectivity develops (Weick, 2001). The creation of the life world through processes of intersubjectivity enable us to identify and explain certain behaviors, norms and traditions that develop in the distributed work environments we investigate. When the social construction of reality governed by intersubjectivity is controlled by language, according to Searle (1995), language is seen to be a tool of accessing each other’s life-world.

The selection of vignettes and blogs for this study was based on the following categorizations: 1. impact on development, 2. conceptually relevant, 3. empirically predictive, and 4. having empirical coherence. In order to illustrate the effects of knowledge networking, vignettes were taken from articles and reports published on the World Wide Web and in books and articles. They reflect peoples’ experiences in very different sets of knowledge networking and development spirals. Popular search engines such as Google and Yahoo were utilized. Keywords used included, “knowledge networking”, “knowledge activation”, “impact of cell phones”, “poverty reduction”, “knowledge networking for development”, “Internet cafes”, “digital divide”, “developing countries”, “African villages” and other terms relevant to the geography, demographics and occupations of the target topic areas. The vignettes were selected on the basis of the Middle and North Africa regions but some latin American and southeast asian vignettes were also included. Vignettes on the social divide were elected as they related to civic engagement, migration, and education.

The same criteria applied to blog selection. Relevant topics were selected from projects listed on the WSIS stock taking database to reflect knowledge networking aspects. These results are analyzed using a selection of transcripts that reflect comments, or vignettes from people interacting on the selected blogs. For each blog, the comments were then grouped into the basis of their comments as they related to the exchange of information, expertise and ideas. The vignettes and blogs are anecdotal and not part of any systematic survey or large-scale sampling. They do represent contours of a phenomenon that is increasingly ubiquitous but ill-understood.

## Results and Analysis

This section reports on the results of the searches and selections based on the phenomenological approach described above. The results suggest that knowledge networking takes place in a global context to support a different types of decision making. In the words of Skyrme (1999), knowledge networking is an integral part of what he terms the “networked knowledge economy” in which decision are made collaboratively. He suggests that as value is shifting to service related knowledge intensive industries, where the importance of location is diminishing. In this decisions are made through the integration of electronic networks with human networking to bring about collaborative strategies for the provision of goods and services. The following sections describe components of knowledge networking as they relate to this more virtually connected world.

### 1. Knowledge Networking

It appears from the vignettes found that knowledge networking is a key component to economic development. It is the means by which people use information and communication technologies to connect with other people and access necessary information needed to make significant decisions. While the decision making processes remain much the same, the outcomes of these decisions significantly impact the economic conditions in which these people find themselves. The following vignettes illustrate how knowledge networking brings about an increase in jobs and/or incomes by enabling better decisions to be made.

#### *Information to get a fair market price*

In Senegal, Mr. Cheikh Ba can use his knowledge of world market prices to more than double the price he receives from intermediaries for his grapefruit. With his cell phone, he checks the market prices for produce twice a week. Using wireless

technology, he dials into a database of current prices compiled by Manobi, a mobile and Internet services operator. “If I did not have the Manobi system, he says, “I would certainly have accepted a bargain price in fear that the buyer would leave and leave me stuck with my produce.” (Source: [http://www.idrc.ca/en/ev-48418-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-48418-201-1-DO_TOPIC.html)).

***More than 3500 Senegalese producers consult the Manobi agricultural market prices by SMS.***

Today more than 3400 producers, middlemen, traders and hotel keepers receive by phone on a daily basis, a free SMS indicating the prices the product they want in any selected market. The users, like Mr. Seydou Ndoye, market gardener at Keur Abdou Ndoye, a village located in the Niayes region, significantly increase their income with this service. “I check the market price of my products with my cell phone and set mine for the middlemen based on the market prices which I know now better or as well as them. For example I managed to sell two hundred 40 Kg bags of cabbage at CFA F 11 000 FCFA each the first day whereas the middleman wanted CFA F 8500 for each. Consequently, I earned F 500 000 more. This was very important for me because other producers have been contacting me ever since to access the information given by Xammarsé” says Seydou Ndoye. (Source: [http://www.idrc.ca/en/ev-48418-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-48418-201-1-DO_TOPIC.html)).

***One-stop business shop***

In Uganda, women make up more than 45% of small-scale entrepreneurs. They are using the Women’s Information Resource and Electronic Service (WIRES) as a “one-stop shop” to find information on markets, prices, good agricultural practices, and support and advisory services. Based in Kampala and linked to two rural telecentres, WIRES provides information that has been gathered from electronic and print sources and then repackaged in easy-to-use databases in local languages. With this information, women in Uganda are able to hone their entrepreneurial skills, expand their enterprises, and boost their family’s incomes. (Source: [http://www.idrc.ca/en/ev-48418-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-48418-201-1-DO_TOPIC.html)).

***Go with the global flow***

“Computer tools and access to the Internet are *not* superfluous to the poor,” says Modou Diouf of ENDA Tiers Monde, a nongovernmental organization in Senegal. He adds that, in an age of globalization, poor countries must go with the flow by taking advantage of networks that link them with the rest of the world. As a result of ENDA Tiers Monde’s work with Acacia, a series of “community resource sites” now provides training and Internet access to those living in the most difficult neighborhoods in and around Dakar. The project has helped transform a grassroots economy to make the social and technological innovations of local groups more visible. (Source: [http://www.idrc.ca/en/ev-48418-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-48418-201-1-DO_TOPIC.html)).

***Student ICT business***

In Inhambane, Mozambique, Momed Cadir has set up a community ICT access centre within his school. Students use the centre for free while walk-in users from the community pay for services. The students and teachers have started small projects such as designing Web sites and recycling and repairing computers. In addition to developing ICT skills, these projects bring revenue to the centre. As a result, the centre is well on its way to sustainability. (Source: [http://www.idrc.ca/en/ev-48418-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-48418-201-1-DO_TOPIC.html)).

The above vignette illustrates the development of a talent pool. Knowledge networking is activated by talent pools. ICT infrastructures have generally been designed independently of talent pools (Keen 2004, Qureshi and Keen 2005). Databases, PCs and software tools may or may not be adopted and used effectively but knowledge networking capabilities are activated by people with the needed interests, access and initiative. These findings suggest that knowledge networking has a direct impact on the ability of people to take advantage of the opportunities that are available through electronic networks. This is consistent with the effects of knowledge networking which enable new ways of working to be carried out. In particular, Qureshi et al (2007) suggest that knowledge networking requires the activation of knowledge and collaboration through the use of information architectures that enable dispersed talent pools to be accessed.

## **2. Migration**

By the end of the twentieth century an estimated 130-145 million people were living outside their countries, up from 84 million in 1975. Castells (2000) points out that such migration has resulted in a growing interconnection between workers in the country where they work, and the rest of the world, through global flows of production, money (remittances), information, and culture. The establishment of global production networks affects workers around the world. Migrants send their money home. Lucky entrepreneurs in their country of immigration often become middlemen between their country of origin and their country of residence. Networks of family, friends, and acquaintances grow over time, and advanced communication and transportation systems allow millions to live in-between countries. And so a global networking of labor evolves. With increasing migration, Castells (2000) mentions that there will be increasing multi-ethnicity in most developed societies, increasing international population displacement, and the emergence of a multilayered set of connections between millions of people across borders and across cultures.

*Migration expert Sally Findley dates Malian migration back to the 4th Century. And she says that for at least the last two centuries rural Malians have been leaving home during the dry season and returning for the rainy season or when life improves. “Migration is an apt response to the cyclical swings of poverty in this region,” wrote Findley, a professor of population and family health at New York’s Columbia University, in a 2004 paper published by the Washington-based*

*Migration Policy Institute. Migration is so deeply ingrained in the culture that in certain regions young people are not allowed to marry until they have gone abroad, according to Malian historian Amadou Sylla. He said that people aged 18-35 from all strata of society deeply believe that only migration will provide a sense of worth, allow them to help their families and eventually enable them to build a life back home. The sums they remit each year exceed over US \$200 million, according to the Ministry of Foreign Affairs. That is more than half of all of Mali's export earnings. "Maliens are making an investment in their country by migrating," said Abdramane Cherif Haidara, chairman of the High Council for Malians Living Abroad. "Some are funding schools in their home regions and health centres." On the other hand, migration drains the country of its rural labour force, according to a study from the Kayes region in western Mali. Yet the author of the study, Flore Gubert of the University of Auvergne, also found that remittances constitute the most reliable mechanism to protect agricultural households from food-insecurity. "Without the financial support of the migrants, the two droughts of 1973 and 1984 would have had much worse consequences," he wrote. (Source: <http://sociolingomali.wordpress.com/tag/african-migrants/>).*

Migration has implications for the ways in which ICT implementations can bring about the needed benefits for multinational businesses. While location is becoming less of a factor with the development of distributed decision making processes, the development and access to talent pools remains a challenge with migration continuing to drain certain regions of the necessary skills.

### 3. Education

Many writers propose theories of how literacy can bridge the digital divides and have research to prove this link (Norris 2001, Servon 2002, and Warschauer 2003). However the social divide continues to be a challenge when people are not free from poverty and do not have the opportunity to get out of it. In these situations ICTs may worsen the plight of the most disenfranchised. The following vignette illustrates how the social divide is affecting the ability to tap into the knowledge resources needed for development to take place.

*Parents in the village of Konovohogho, Côte d'Ivoire face a tough decision when their children reach school age: Do they send them to class or to work in the fields? Nearly 1 million children in this war-ravaged country do not attend school – a situation that contributes to a literacy rate of just over 50 per cent. Three years ago, the local non-governmental organization ARK, with help from UNICEF, began offering parents an alternative. Instead of choosing between school or work, children were given the chance to attend class in between raising crops or tending livestock. From field to classroom: Two of the most promising students are brothers Waodjanga and Kadokan Silue, ages 12 and 8, respectively. They belong to a family of 10 children, all of whom help out in the fields. The boys spend an hour working outdoors in the morning and several more in the late afternoon. In the intervening hours, they attend classes. During busier periods of the year – like the times when Waodjanga and Kadokan must walk for days to feed their animals – they go to class less frequently. But during the slow season, they're able to dedicate themselves to nearly full-time study. "I will be able to share the knowledge I gain in school with my family," says Waodjanga. "I can teach those who have not been able to go to school. It will also help me get a job."*

There are opportunities for development here. The work of Schumpeter's (2002) theory on economic development suggests that through technical and organizational progress, development takes place as knowledge progresses. New technical innovations can bring about development if they offer opportunities for new enterprises. In particular, an educated workforce provides greater opportunities to increase productivity for enterprises than one that is not.

### 4. Civic Engagement

In her study of civic engagement on the internet, Norris (2001) suggests that digital politics serves to engage the engaged. Contrary to expectations, Giddens (2003) found that the young generation is highly engaged in public life as they live in the same information environment as those in power over them. The participation of people in governance serves to empower them and enable them to make choices that directly affect their ability to have better lives. This is a key factor in the social divide that affects the ability of people to gain from the opportunities brought about from ICTs.

*Douglas Racionzer is bringing economic opportunity and social development to marginalized townships by transforming existing small businesses into successful enterprises that also serve as delivery networks for a variety of community services. In South African township communities where it is next to impossible for outside organizations or government agencies to function on a formal and effective basis, Douglas is tapping the corner store and other local businesses to become the foundation for community economic development and a hub for social services. Through Emerging Market Services (EMS) and other organizations, Douglas is giving neighborhood entrepreneurs the expertise and resources they need to expand their operations from mom-and-pop shops to real commercial enterprises, and at the same time using their position in the community to deliver needed services like HIV testing. By participating in Douglas's effort, shop owners increase their earning potential, provide jobs for others in the community, and contribute to the overall well-being of the neighborhood.*

<http://www.ashoka.org/node/2407>



***An Internet home for NGOs***

In Brazil, *Rede de informações para o terceiro setor* (RITS) works to help civil society organizations use ICTs on such issues as human rights, education, the environment, and health. RITS disseminates a weekly e-zine of news from nongovernmental organizations (NGOs) and its Web site hosts a virtual research centre on Brazilian civil society. RITS also provides Web site hosting, email access, and Intranet services for hundreds of organizations. RITS believes that if NGOs invest in the Internet, they will be better equipped to address the needs of their clients, often among the poorest of the population. ([www.rits.org.br/](http://www.rits.org.br/)). (Source: [http://www.idrc.ca/en/ev-48418-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-48418-201-1-DO_TOPIC.html)).

***People power through WiFi***

Dr Onno Purbo regularly attracts hundreds of people to his seminars in Indonesia on how to build community-based ICT networks through Wireless Fidelity (WiFi). The author of more than 40 books, Dr Purbo posts all his “how-to” technical information on the Web, free for anyone to download. “I don’t believe in equipment power; I believe in people power” says the self-described ICT evangelist. The decade-old grassroots technology movement has resulted in more than four million Indonesian Internet users, 2500 WiFi outdoor installations, 2000 cyber cafés, and more than 1500 schools connected to the Internet. (Source: [http://www.idrc.ca/en/ev-48418-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-48418-201-1-DO_TOPIC.html)).

***From the Net to the Loudspeaker to You***

At a temple in Veerampattinam, loudspeakers have been erected among the statues. They are one innovative way that a project by the M.S. Swaminathan Research Foundation uses traditional and new technologies to provide information that empowers villagers. The loudspeakers broadcast weather forecasts, downloaded from the Internet, that are potentially life-saving for local fishermen. Other information includes agricultural techniques, market prices, government programs, and local bus schedules. The centre shows how the delivery of relevant information contributes to rural development. “As a single intervention, information and knowledge empowerment can give a quantum leap in terms of improving the security of livelihoods,” says Professor Swaminathan. (Source: [http://www.idrc.ca/en/ev-48418-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-48418-201-1-DO_TOPIC.html)).

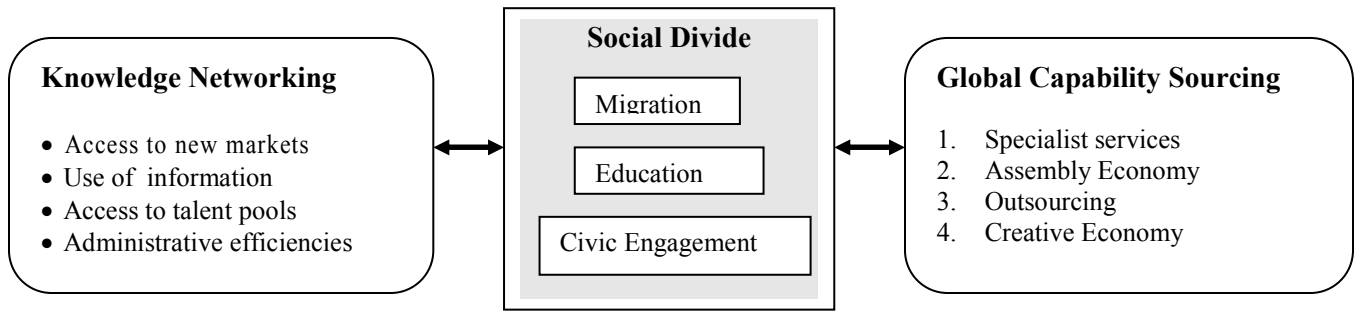
***Laptop warrior against human rights abuse***

For the past 39 years, Colombia has been plagued by civil war, with its attendant human rights abuses. A 23-year old Paez Indian, Vilma Almendra, uses ICTs as an antidote to violence against Indigenous peoples. Almendra coordinates the community information service or telecenter, in the town of Santander de Quilichao in southwest Colombia. The telecentre lists and denounces human rights abuses, particularly killings and abductions, and brings them to national and international attention. Many Paez have used the Internet to circulate pictures of friends and relatives who have gone missing after armed attacks on towns and villages. “We have succeeded in reaching international audiences,” says Ms Almendra, “something we weren’t able to do before we set up the telecentre. We can now communicate with the media, donor agencies, and human rights and environmental organizations.” ICTs are also helping Paez and other indigenous communities to push ahead with their own social and economic development, including education, health, land management, legal protection, and monitoring legislation. (Source: [http://www.idrc.ca/en/ev-48418-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-48418-201-1-DO_TOPIC.html)).

Giddens (2003) suggests that the more science and technology intrude into our lives, the more active or engaged our relationship to it becomes. We cannot just accept what we are told we question it and must form our own opinions. This is the literacy that is needed to bridge the social divide.

**A Knowledge Networking Model of Distributed Decision Making**

It appears that while the benefits of knowledge networking are many, these can be best reaped by bridging the social divides. Castells 2000 is notable in his description of globalization to be fueled by information technology in what characterizes this current technological revolution is not the centrality of knowledge and information but the application of this knowledge and information to knowledge generating and information processing devices. These form a cumulative feedback loop between innovation and the uses of innovation. This feedback loop can enable decisions to be made that enable ICTs to be used to bring about increases in incomes and better livelihoods. The internet can promote social capital and has been shown to bring about more extensive social networks of support within and outside the geographic areas in which the participants reside (Warschauer 2003). This analysis of the results suggests that decision making has become a collaborative process of inquiry that can enable people and processes to transcend the social divide. The vignettes have illustrated how knowledge networking can be successful by enabling people and businesses to access new markets, use information they would otherwise not have, achieve administrative efficiencies and enable diverse talent pools to be accessed. Knowledge networking can transcend the social divide by enabling migration to mitigate the brain drain, community building and education to enable larger pools of talent to be retained. In particular, civic engagement has been shown to empower people to make choices that affect the communities in which they live. When knowledge networking processes are able to transcend the social divide, businesses are able to make decisions relating to the sourcing of global capabilities (Keen and Qureshi 2006). This has a direct effect on the ability of these businesses to innovate, access and hire needed talent. This increases incomes and enables further sourcing of talent from these regions as is illustrated in Figure 1.



**Figure 1: Knowledge Networking Model of Distributed Decision Making**

According to the Global Capability Sourcing Framework provided by Keen and Qureshi (2006), 1. Specialist services offer premium skills at a low cost burden. Cost is a key factor but it is the quality at low cost that is the main attraction. 2. The assembly economy is the area of many lesser developed countries. Here, low cost workers handle commodity tasks. Many of the widely-reported abuses of workers in the textile and apparel industry reflect the fact that this segment is price-based with no premium offer to add. 3. The outsourcing of high labor cost burdens for commodity skills applied to commodity tasks. A commodity task may be defined as one that can be learned in weeks and that is a strong candidate for automation: back office administration is the obvious example, along with routine telemarketing, machine-tending and customer phone service. These are jobs that are increasingly also candidates for contract- and price-based outsourcing to specialist services, wherever those may be located. 4. The fourth quadrant is the Creative Economy, the term that parallels the concept of the Creative Class (Florida, 2002). Florida claims that in cities and regions of the U.S. that are dominated by design companies, researchers, the arts, higher education, media firms and other creative communities, earnings are around 35 percent higher than the average.

The results of this research suggest that through knowledge networking farmers, small business entrepreneurs, students and NGOs are able to access new markets, use information that they otherwise would not have access to, access talent pools and get help with running their activities more effectively and efficiently. This form of distributed decision making has a direct effect on the ability of these people to increase their incomes. However the ability to achieve these gains through knowledge networking depends upon the social divide. The greater the social divide the more difficult it becomes to source global capabilities and participate in the industries that provide special services, assembly of low cost products, outsourcing and even creative communities. This suggests that through knowledge networking organizations are able to make decisions that enable them to source talent, goods and services from regions that provide the lowest cost burden. At the same time these distributed decision making processes can enable educated people to be employed by global businesses and participate in public life without having to migrate.

## Summary and Conclusions

The narrowing of the digital divide and prominence of the social divide has presented a challenge for the development of distributed decision making processes. The rise of knowledge networking has meant that through the use of ICTs, human networking can enable businesses to source their goods and services from geographically dispersed locations. This paper has shown how knowledge networking can enable the social divide to be bridged by investigating the core components of knowledge networking, the social divide and the applying this analysis to the global capability sourcing framework. It has illustrated how decision making processes are transformed through knowledge networking as they are not only distributed, but become collaborative and are activated through a demand for action. Following an analysis of vignettes on components of knowledge networking and the social divide, this paper provides a Knowledge Networking Model of Distributed Decision Making as it relates to the sourcing of global capabilities. This has implications for how businesses make decisions that relate to how they source talent and other resources from regions that provide the best social conditions.

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