

Knowledge Management for E-Governance

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Abstract. E-Governance is today one of important issues in different agendas of politicians, activists and researchers. The complexity of this topic, blended with the uncertainty of the future generated by ICT revolution, lead to many contradictory interpretations, predictions and analyses. One of spectacular contradictions related with e-governance has to do with developing countries. We consider the concept of "Knowledge Management (**KM**)" as one of keys to understand the role of ICT and of e-governance for developing countries. In this context human and institutional aspects must be considered much more seriously as usually in different agendas of e-governance.

1. Introduction

Recent years a lot of research is done to understand and explain different phenomena seen in developing world (see [1] for example). A key issue in political agendas of today is the so-called "e-governance", that is the application of information and communication technologies (ICT) for improvement of governance processes and of dialogue between the state and citizen.

Heeks [2] defines the concept of e-governance as "*e-Governance is the use of information and communication technologies to support good governance; it moves beyond old 'IT in government' models thanks to the new digital connections that ICTs permit.*" Improvement of inside administration processes through intense deployment of ICT may lead to more effective governance. Nevertheless, two questions emerge - what is the impact of e-governance to the ordinary citizen, and what is the effectiveness of ICT deployment funding. Both questions seem disputable.

Heeks [3] considers two crucial issues for e-governance - e-transparency and e-accountability. Transparency is defined as "*Transparency means openness of decisions and actions put another way, it means a free flow of information about decisions and actions, from source to recipient. eTransparency means the use of information and communication technologies (ICTs) to handle some or all of the transparency-related information flows.*"

On the other hand, the accountability has as first premise the transparency - information about decisions and actions, but the point is to make public officers to account for their decisions that may imply actions by different organizations with power to hold public officers accountable.

All these are simply "dry definitions". Being a tool for acquiring knowledge that is a non-material kind of wealth, ICT impacts the power of different components of the order emerged from the "classical" industrial revolution [4]. It impacts the politics,

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and the outcome is difficult to be foreseen. For example, Nath [5] suggests that transforming the society ICT will lead to extra-democratic development of humanity, while Guehenno [6] predicts the end of democracy.

The question on effectiveness of ICT deployment may look pretty strange, considering the positive opinion on ICT today - it is an accepted fact that ICT in both developed and developing countries seems to be indispensable and probably even an "inevitable luxury". Such arguments may serve to support investments on IC, but they are not solid evidence for the effectiveness of ICT, as we will see later. For a long time many researchers have pointed out, based on numerous surveys, that the impact of ICT does not depend simply by investments on technology and that organization, social, cultural and human factors are critical as well. We have to deal with other issues beside the technology, in particular with the *knowledge*.

Daniel Bell defined the concept of "information society" as byproduct of ICT revolution in 1973. Margetts [7] relates this definition with the concept of governance, considering the transformation through integration of government and IT. Bangemann [8] reshapes old arguments based on recent ICT developments, pointing out that "*throughout the world, ICT are generating a new industrial revolution... this revolution adds huge new capacities to human intelligence and... changes the way we work together and the way we live together.*" ICT serves as a tool for acquiring knowledge, a non-material kind of wealth; and its impact is shaped through the fusion of globalization and knowledge networking ([9], [10]). At last, the concept of *knowledge* gets "legalized" through theories and practices of KM (see for example [11]).

We argue that KM is one of key issues to understand the role of ICT and to assure real positive impact on functioning of e-governance. At the same time KM seems to be a complex and contradictory process, which development requires careful policies and practices on preparation of conditions, deployment of technologies, and development of applications. Realization of KM in a developing context seems to be a difficult task, as shown in recent research carried out by University of Manchester [12].

2. Knowledge Management for E-Governance

Definition of "knowledge" varies depending on specific contexts this concept is analyzed. A formal definition is given by Ramaprasad and Rai (see [13]) while arguing on semiotics processes and stimuli:

- *stimuli are at morphological level - collection of unconnected symbols*
- *at syntactic level stimuli are related to each other by rules to produce data*
- *at semantic level meaning is attributed to stimuli which relationships give information*
- *at pragmatic level the meaning of stimuli is intercepted in a particular context ... and generates the higher level of information called **knowledge***

This pragmatic level is the key to understand the difference between information and knowledge, and a simple description of it is given by Davenport [14] who considers

knowledge "information + experience". Being a "special" kind of information, knowledge as a concept is used in parallel with information in terminology; we find "knowledge society" and "knowledge management" in parallel with "information society" and "information management". But the knowledge implies a strong human presence through its second component that is "experience". Experience itself is a form of tacit knowledge, which is embedded in the head of people, in difference with the explicit knowledge that may be found in manuals.

This entire means that we need to take into account differences between knowledge and information in both aspects, the role within an organization and the ways of management. We may distinguish three issues related with knowledge within an organization:

- i) Training of personnel. This is today a widely accepted theory and practice, expressed with the motto "life-long learning"
- ii) Creation of experience during the daily work within the organization. This is a disputable issue - how within an organization the creation of personal experience is motivated and organized.
- iii) Management of created experience within the organization. This implies the ways how personal experience is collected and reused, i.e. how tacit knowledge is transformed in explicit experience. This issue is in discussion by many researchers and applicants today.

Gill [11] gives a synthesis of some typical definitions of KM. Gartner Groups considers *KM as an integral approach to identifying, capturing, retrieving, and sharing and evaluating an enterprise's information assets*; both formalized in databases and informal tacit expertise. On the other hand, Burns (Creative Networks) comments the KM from another perspective considering it as "web thinking", that is *lateral thinking emphasizing a network of relationships between pieces of information and between information and people, compared with traditional thinking that is ... linear and sequential*.

Those definitions are built over the concept of knowledge as "the higher level of information" and in this context knowledge may be considered as *the most strategically significant resource an organization can employ to improve operations performance* [15]. Management of this critical resource becomes crucial for an organization; and Davenport and Prosac [16] give examples how well known world wide companies experienced failures in repeating of design processes they did successfully before.

Considering such arguments, and the fact that especially in developing countries e-governance processes seem to be problematic and disputable, we may consider the management of knowledge as one of key issues for successful deployment of e-governance. **The idea of "better governance" does not mean simply acceleration and facilitation of communication between government and citizen, but first of all resolving of citizens' problems. With well deployed ICT for e-governance, public administration may (to be polite) be invaded with citizens' problems of all kinds, dimensions and seriousness; which classification and resolving is difficult (not to say impossible) without maximizing the performances of organizations' operations through effective knowledge management.**

In this context, development of information systems (IS) over modern ICT to collect and process the information remains in semantic levels, while for KM we must jump to higher semiotics level. Researchers have insisted that, in order for public administration to have effective use of ICT, it is to build institutional IS, databases and applications; and not to remain in what we usually see in our administration, i.e. individual applications, use of computers for simple tasks as typing, and exchange of messages via email systems (see for example [1]). Such institutional IS may be only the first step towards effective KM.

Today all administrations in developing countries play with the ICT-related terminology and somewhere concrete steps are undertaken to implement ICT and deploy IS. This relatively positive situation may become a real problem when KM is under consideration. First, decision-makers may get accustomed with the terminology and pretend to care about KM. Second, ICT based KM is similar with information management - we deal with databases and content management in both cases, the difference is how we do it. For KM it means to include individual experiences and tacit knowledge into explicit knowledge stored in accessible way within information systems of the organization. That means to deal with people and "here hides the rabbit".

The questions are simple. Who is keeping today the trace of individual data processing and of individual messages that circulate within public administration? And, in the context of privacy legal issues, to what degree we may trace, store, classify and process data originated from individual work of personnel in public administration? We may store in a document management system different versions of a draft, but considering the experience of individuals, important is the process how this draft evolved. Corporations mentioned by Davenport and Prosac [16] did not suffer from missing of technical designs, but from the knowledge to repeat similar design processes. Durrant [17] explains that *effective e-government requires cultural change, incorporation of organizational teams, identification and evaluation of KM assets, and incorporation of facilitating ICT*. We need to deal first of all with cultural issues.

3. How difficult is Knowledge Management?

Gill [11] identifies three steps common in KM processes:

- i) *Identifying organization's knowledge assets and intellectual capital,*
- ii) *Capture and retrieve organization's knowledge ... in a knowledge base,*
- iii) *Share and evaluate it through a central easily accessible & searchable repository.*

We have two critical issues in these steps. First, we need to identify and retrieve the knowledge, including *tacit knowledge* that is hidden in the head of people. Second, we need to share it through a *centralized* repository. Both are problematic and related with cultural, political and technical issues.

Cultural point of view. We will use three of cultural dimensions developed by Hofstede [18] to focus the attention in main cultural aspects that have to do with KM:

- a) Uncertainty avoidance (UAI) - how comfortable people feel towards ambiguity (high if ambiguity creates stress, non-acceptance of conflicts and need for regulations). Low ranked cultures feel more comfortable with the unknown.
- b) Power distance (PDI) - extent to which less powerful members of organizations accept that power is distributed unequally (high if there is a need of dependence and hierarchy, inequality is accepted and superiors are inaccessible).
- c) Individualism versus collectivism (IDV, high if conscious "I" instead of "we", obligations "to self" instead of "to group", loss of "self-respect" instead of "face/shame").

Values of cultural dimensions vary in different countries, and we need to take into account potential differences related with the degree of development of the country. The key question is "how easy people may give away his personal tacit experience and accept that of others?"

KM implies formalization of explicit and tacit knowledge within complex IS and increasing the regulation of an organization. That means to reduce the degree of ambiguity of the organization's system. Communities characterized by lower values of UAI feel better with higher ambiguity and may not easily accept reducing of ambiguity.

Knowledge is power, in the same way as information but of higher value. Deployment of KM systems means direct access to the knowledge for decision-makers, that otherwise would have to directly address to lower levels staff to prepare it. Links between different levels of hierarchy become more invisible and work of personnel more regulated. Communities characterized by lower values of PDI would feel uneasy with the idea of strengthening the hierarchy.

The value of knowledge assets is higher than those of information due to the component of *experience*. Knowledge gives power to each individual. Communities characterized by higher values of IDV would not easily accept the idea of giving away personal experiences. In this context it is important to consider individualism as missing of "team spirit" necessary for the personnel of an organization to work together.

The same "dimensions" can be mapped in political, managerial and technical "spaces".

Political point of view. KM implies creation of a "central repository to share and evaluate captured knowledge". "Centrality" is a necessity for development of a dense mesh of links between different pieces of information as a substratum for storing of captured experience. This concept of "centrality" does not match with the principle of decentralization, which is an important component of political agendas today, both in administration and SME businesses.

On the other hand, formalization and management of knowledge implies application of complex regulations as guide for daily operations of organizations and decision-making. Such requirements do not match with practices followed in developing countries, characterized by lack of structured information systems in public administration and dominance of personal preferences of decision-makers instead of professionalism.

Managerial point of view. An important policy in today's management of organizations is promotion of individual and small group initiatives as an effective way for better use of resources, opening of new perspectives and markets, and sustainability. On the other hand, deployment of KM implies formalization of the knowledge and application of regulations to force people to use captured knowledge. In such context it is necessary to define a delicate balance between applications of existing experiences versus creation of new experiences.

How may we realize such balance in daily's work of employees? Considering the complexity of society's problems, it cannot be done simply through regulations, particularly in developing context. It is well-known that forcing deployment of IS in some organizations, even in developed countries, may dramatically fail if end-user preferences are not considered. The good will of employees and decision-makers to evaluate positively with "team spirit" different constraints and optimize the ratio between existing and new experiences is a necessity (it smells like "Confucism").

Technical point of view. "Centrality" seems to be a principal issue for KM. On the other hand, considering the decentralization policies, we may expect development of separate IS and the use of telecommunication means for their interconnection and exchange of data. KM requires much more - a distributed IS to function as a centralized one. We need to design distributed systems (to match with decentralization) that may run as a centralized easily accessible system (to match with KM requirements). It goes beyond actual web-based technologies; probably grid technologies may give a hand, but anyway it means considerable investments and in this point new problems and ambiguities emerge.

As summary, we have to deal with a complex of political, managerial and social factors that are specific for different countries, especially when developed and developing worlds come together. The main idea is that we need to consider this "difference of rationalities" [19]. For more details see also [1].

4. Is there an "Information Revolution"?

The concepts of "information revolution" and its byproduct "information society" are widely accepted and included in political agendas in many countries. We saw that difficult and contradictory KM is the highest level of management of information-blended-with-experience; and deployment of ICT for information management seems to be an intermediate stage towards ICT-based KM. In this context we may expect that information revolution will lead towards "knowledge society" as the highest level of "information society".

But it is not only the human dimension that makes KM difficult. There are at least two critical questions, what is the real role of technology itself, and how is the technology acquired by developing communities.

The role of technology. While analyzing the impact of ICT in developing countries, Heeks and Kenny [20] pointed out that *there is a strong correlation between ICT per capita and GDP but in which direction does causality flows?* In other words, *does*

spending for ICT makes nations richer? Innovations should make more efficient use of capital and/or labor to produce output and increase growth. However it also includes much broader notions of technology including "business technology" (management techniques), "political technology" (forms of governance) and "social technology" (forms of human interaction). This suggests that the impact of any individual technology on growth is likely to be smart...

Other studies support the argument of Heeks and Kenny that even in developed countries despite a significant increase of ICT there was no productivity growth [21], [22]. Moreover, Gordon [23] gives some evidence that the idea of declining returns of ICT investments. Perhaps this pessimistic opinion is result of *product of miss-application of IT or incomplete research, rather than a product of the nature of IT* [13], nevertheless it demonstrates that there is a critical ambiguity between expectations and impacts of IT.

Shocking conclusions of Heeks and others give support to the thesis of Bimber [24] that deployment of ICT may lead more to *acceleration of processes*, and probably it is this phenomenon prevailing in our daily life. Acceleration of processes for retrieving of information helps in development of knowledge but it is not the same thing. Creation of pieces of knowledge is something personal while its distribution and exchange has to do with human interactions more than with technology. There are communities where human relations and knowledge evolved simply through technology - people from "open source world" (see [25] for example); but it is difficult to think that public administration (i.e. the state) and businesses (i.e. the money) will follow this way of life.

Technology in developing world. Deployment of ICT has become "way of life" in developed countries. Heeks and Kenny [20] argue that *ICT - like most technology - were almost entirely developed within a capital-rich setting, they are embodied in significant quantities of capital and are designed to save labor. They are thus inappropriate for a DC setting, where capital is rare and labor plentiful.* In this context ICT interacts with other institutions that differ in different societies [26]. While in advanced societies IT allies with management, in developing countries it is an ideology supported by international organizations and professionals. As result, ICT in developing countries involves conflicting interaction with local historically developed institutions. This is the conflict of different rationales.

Ciborra and Navara [27] argue that good governance, reforms and innovations of the state are pre-requisite for development. As result, neo-liberal state implied by e-governance may not lead to *rapid late development*. External aid interventions and standardized ICT for e-governance may be difficult when local variables are considered. Moreover, it may lead to a kind of "neo cargo cult" blended with all kind of modern speculations; because ICT cannot resolve underlying institutional deficiencies. ([28] gives a comprehensive description of "cargo cult" in framework of ICT use in developing countries).

Cargo cult is a phenomenon of the past. But, do human beings really wish to learn from the past? In particular political, social, managerial and economic conditions people may try to avoid learning from the past. What remains then for knowledge management?

5. Conclusions

Conclusions seems to be contradictory and forming a vicious circle. Real impact of ICT may be expected when KM is taken into account. KM itself has to do with personal experiences and tacit knowledge of individuals and a complex of cultural, political and managerial conditions that do not correlate well with each other.

On the other hand, even in developed countries the real impact of ICT seems small when compared with respective investments, and ICT itself as product of developed societies do not match well with developing realities. In extreme cases it may lead to appearance of new forms of cargo cult as happened with cannibals of New Guinea hundred years ago.

For developed countries ICT may be a way of life, supported by existence of necessary resources for their development, implementation and deployment. In developing countries it seems to remain an inevitable luxury that may help, through acceleration of different processes, to improve interactions with developed world.

When focusing on e-governance issues, we need to consider that:

- Public administration has to deal with the complexity of human problems in an accelerated world, and it needs knowledge to do it. It is different from domains like engineering, for example, where the knowledge is more or less written in books.
- To manage knowledge we have to deal with people and motivate the "team spirit" in a world where individuals are somehow concurrent with each other. Knowledge needs time to be created, has ambiguous character and it is socially constructed.
- Developing countries need to adopt specific ICT for KM solutions in order to match better local needs and conditions, which are characterized by lack of material resources. Developing communities must adopt themselves with those technologies produced by an "alien world" to gain positive impact and assure sustainability.

The essence of message is that, for developing world to assure positive impact from ICT deployed for information management in e-governance, and to assure a long-term growth that would lead towards "knowledge society", the technology is only a painful but easy beginning. The most difficult, painless but very dangerous is the question of political will in all levels of the society.

Positive political will is requested for government to implement e-governance for itself and citizen; it is needed to promote effective education of people not only in technical issues but first of all in "team spirit"; it is needed for ordinary people to learn to be self-sustainable, adaptable, inventor, and find that delicate equilibrium between individualism and collectivism.

In any case it would be wrong to consider KM as the key to all problems, deployment of new technologies only shift problems from one dimension to another. At the same time it would be wrong to consider KM as something of far future, because the roots of future are in the present. We need to think about it.

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