Building Global Governance Capacity
through Knowledge Management, Organizational Learning, Innovation
and Technology Transfer

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ABSTRACT:
This paper presents an underlying rationale for the importance of technology transfer for both organizations and cultures. Technology transfer involves the use of shared information to improve organizational effectiveness or public policy outcomes. Conceptually, it involves the relationships among information, knowledge, and wisdom. Operationally, it requires the creation and management of knowledge in learning organizations through a “knowledge spiral” by which individuals’ insights and innovations help the organization adapt to changing and challenging environments. On a more global scale, it involves the successful diffusion and adaptation of innovations from their initial context to another region or country to achieve economic, social, political, or environmental goals. Viewed in both organizational and societal contexts, technology transfer requires an understanding of the conditions and factors that make successful adaptation of endogenous technologies to exogenous situations, and the systematic development of guidelines and methodologies for successful innovation diffusion and adoption. This paper addresses the following topics:

- How do information, knowledge, and wisdom work together in the information and communications technology equation (ICT)?
- How does ICT relate to organizational learning and knowledge management?
• How do knowledge management (KM) and organizational learning (OL) relate to innovation diffusion and adoption (IDA)?
• How do ICT, OL, KM and IDA relate to technology transfer (TT)?
• How do these linkages relate to organizational effectiveness?
• How do they relate to the sustainability of best practice public policy innovations?

This paper is based on the authors’ global experiences in administration and development and on references from the fields of knowledge management, organizational learning, innovation diffusion and adoption, technology transfer and governance capacity building.

**Keywords:** technology transfer, knowledge management, organizational learning, governance capacity building.

**Introduction: An Underlying Issue**

Today more than ever before, pressures to increase government capacity require wise policy decisions that maximize the use of scarce resources. This means, among other things, the diffusion and adoption of innovations that can build global governance capacity through political, social and economic development.

The development and diffusion of “smart practice” innovations involves an implicit or explicit change model. Therefore, we must discuss organizational or societal adaptation through a model of knowledge management, organizational learning and technology transfer that speaks to the following questions:

• How do information, knowledge, and wisdom work together in the information and communications technology [ICT] equation?
• How does ICT relate to organizational learning [OL] and knowledge management [KM]?
• How do KM and OL relate to innovation diffusion and adoption [IDA]?
• How do ICT, OL, KM and IDA relate to technology transfer [TT]?
• How do these linkages relate to organizational effectiveness?
• How do they relate to the sustainability of best practice public policy innovations?

**The ICT Equation: Information, Knowledge and Wisdom**

Information and communications technology [ICT] is fundamentally about people process and use information within organizations and society. ICT is both timeless, in that the essence of society is the communication of ideas and perceptions, and timely, in that modern conditions necessitate the transformation of human relationships through information and communications technology (United Nations 2003). It is both value-neutral, in that the medium is the message (McLuhan and Lapham 1994), and value-laden, in that all social interaction may be viewed as the process of making sense out of information, sharing this understanding, and using it purposively to improve organizational effectiveness or the human condition (Szewczak and Snodgrass 2002).

The most general way of understanding the importance of ICT is by viewing the relationship among information, knowledge and wisdom. Information is simply raw bits of data. Knowledge is categorized or sorted data, with the sorting carried out based on some implicit or explicit relationships. And finally, wisdom is the application of knowledge to make individual or organizational choices (Cleveland 2002). This means that receiving, sorting and using information is a process determined not only by the
nature of the information itself, but by the perceptions, values and instincts of the people who perceive and interpret it.

**Organizational Learning and Knowledge Management**

Human interaction occurs within a patterned social and cultural context. First, from the descriptive perspective of general systems theory (GST), human interactions are socio-psychological processes (perception, cognition and communications) that occur as patterns within a structural and functional organizational context (Katz and Kahn 1963). Second, because organizations not only presumably evolve to ensure their survival within a complex and shifting environment but also to achieve their members’ or leaders’ intentional objectives, this patterned interaction has normative implications. Successful organizations are of necessity capable of learning and change (Thompson 1967).

The fields of organization theory and administration behavior include literature on organizational learning [OL] from varied perspectives – individual, group, organizational, segments of the economy, national, and even civil society as a whole (Casey 2003). OL is complex. First, for social psychologists, it means understanding how individuals’ perceptions and interactions give rise to infinitely more complex organizational behaviors, and how that organizational culture in turn shapes individual perceptions and behavior (Smith 1997). Second, for organization theorists and managers, is requires explaining organizational change. Some argue that achieving organizational coherence (e.g. commonality of purpose), and homogeneity (of culture or values) is essential, while others argue for difference, diversity and creativity. Two bodies of literature from the natural sciences – the theory of self-producing systems (auto-poiesis) and the theory of
non-linear systems (complexity theory) – may offer a new perspective on this problem (Goldspink and Kay 2003), to be supplemented by specific managerial applications or organizational knowledge creation and management (e.g., Nonaka 1991, and Nonaka 1994) that will be explored in more detail later in this essay.

Knowledge management [KM] assumes that OL is coherent and purposive because it implies the organization and use of information in social contexts (e.g., individual, organizational and societal). Within organizations, KM is the creation, capture and use of records, databases and other information – including uncategorized perceptions – to achieve organizational objectives (Pemberton 2004). Within society, knowledge management (KM) is the effective, purposive use of knowledge by leaders in positions of authority or responsibility to achieve social, political, economic, cultural or environmental objectives. Thus, it is closely allied with building governance capacity.

**Innovation Diffusion and Adoption**

The term “innovation diffusion and adoption” [IDA] describes the spread of new products, values, policies or processes beyond the locus of their original success. If viewed purposively, this spread can be described as both OL and KM (Sabet and Klingner 1993). If viewed descriptively, it includes the intended and unintended consequences of the complex and symbiotic relationship between producers and consumers that occurs across organizations (Schrage 2004), countries (Beatty 2003) and regions (Mavhunga 2003). From a descriptive perspective, TT is value-neutral: We study it in order to learn how endogenous conditions and factors influence IDA. But more often, our focus is prescriptive. Organization theorists want to know about factors affecting OL
in order to make organizations more effective at serving customers, competing in markets, or developing products in emerging fields. Public administration and development specialists want to understand the characteristics that affect the exogenous sustainability of endogenous “best practice” innovations once they are transplanted elsewhere, in order to achieve economic, social, political or environmental objectives such as the United Nations’ Millennium Development Goals (Klingner 2006).

**How Do ICT, OL, KM and IDA Relate to Technology Transfer?**

Information and communications technology (ICT) improves opportunities for facilitating knowledge management. Conceptually, ICT is the technical platform that enables a knowledge management system to function by enabling people to organizing and compile information. And if organizing people in shared spaces for knowledge creation helps in mass production of knowledge on the technical side, ICT can enable virtual creation of such spaces – a solution that is not tested sufficiently, but in theory, one that can revolutionize the process of knowledge creation. In the business world, the technological innovations with which businessmen rush to the global market embody new knowledge.

Technology transfer is the processes and consequences of moving technology across boundaries (e.g., national, geographic, cultural, social and organizational) (Seely 2003). To summarize the previous discussion: ICT is the driver, OL and KM are examples, and IDA is the process by which TT takes place.
Knowledge Creation and Organizational Effectiveness

Our focus on TT is both descriptive and normative. Descriptively, we hope to provide insights into the factors underlying technology transfer, the mechanisms or processes by which it occurs, and its consequences for both donors and recipients. Normatively, we hope to develop theory and provide examples to aid technology transfer practitioners from a range of disciplines. Personally, we hope to look at the world, and our own role in it, in a new way (Cleveland 2002), based on Harlan Cleveland’s list of attitudes he considers indispensable to the management of complexity (Cleveland 2002: 7-8):

Insert Figure 1 Here

Normatively, these linkages matter for two reasons: organizational effectiveness and social change. The first is of overwhelming economic interest to managers, employees and other organizational stakeholders. The second is important from a global perspective on economic, social, environmental, cultural and political conditions.

For most organizational stakeholders, the goal of good management is a knowledge-creating company that manages knowledge effectively and learns from it (Nonaka 1991; Nonaka 1994)). Historically, classical organization theory has considered organizations to be machines for information processing. But creating new knowledge is more than processing objective information. Viewed interactively and holistically, it “. . . depends on tapping the tacit and often highly subjective insights, intuitions and hunches of individual employees and making those insights available for testing and use by the company as a whole” (Nonaka 1991: 97). The “knowledge spiral” begins within
individual insights that are first recognized explicitly by the employee, and then transformed into organizational knowledge that helps the company respond quickly to customers, develop new products, or dominate emergent technologies. This process involves several distinct kinds of organizational learning:

- **“Tacit to tacit:”** Individuals share knowledge with each other than cannot necessarily be communicated explicitly (e.g., socialization or “on-the-job” training).
- **“Explicit to explicit:”** Individuals synthesize separate pieces of information into a new whole.
- **“Tacit to explicit:”** Individual employees convert tacit knowledge into a form that can be shared with other employees.
- **“Explicit to tacit:”** As explicit information is shared within the organization, employees begin to internalize it so that it automatically affects their perceptions, feelings and thoughts.

A learning or knowledge-creating organization utilizes all four forms of learning in an interactive “knowledge spiral” that defines adaptive, visionary organizations. From a practical perspective, environmental fluctuations stimulate individual knowledge only if they are accompanied by a complemented by a managerial style. Its underlying principles are reflection (to turn tacit into explicit knowledge), redundancy (multiple and conflicting information processing systems), and a middle-up-down leadership model that combines efficient and effective information processing (Nonaka 1994).
Technology Transfer and Public Policy

From a societal perspective, building government capacity is a key to sustainable development. The capacity to manage knowledge is an increasingly important component of this process. Databases build government capacity by providing easy access to necessary information and knowledge. To build capacity, a database must include not only relevant information but also a mechanism for making connections between disparate concepts and documents. Success in a knowledge-based society requires sophisticated approaches to gathering information, while at the same time enabling users to disseminate it on a real-time basis. Passive databases represent an early stage of ICT knowledge management applications. Interactive, participative, and networked forms of ICT can be demand-driven and customer-centered, offering more opportunity for service enhancement through e-government.

From within the framework of public policy, Knott and Wildavsky (1980) scale the use of university research in government agencies using six stages: “reception, cognition, discussion, reference, effort, and influence.” They point out that their scale is cumulative in nature, each stage building on the previous one (Adapted from Knott and Wildavsky 1980, as cited in Landry et al. [2003: 194]):

![Insert Figure 2 Here](image)

Lester and Stewart (1996) classify different types of factors that researchers suggest impact knowledge utilization by public officials. The first category is technical factors – primarily the availability of information and the appropriate rational/technical
organizational resources to use it (Julnes and Holzer 2001: 695). Julnes and Holzer (2001) find that internal requirements, resources, goal orientation, and information increase the likelihood that agencies will adopt performance measures based on policy research. Interestingly, the adoption of performance measures does not necessarily mean that the policy research results will necessarily be implemented (Julnes and Holzer 2001: 701-702). Landry et al. (2003) corroborate this, finding that knowledge utilization varies depending on the policy domain.

Second, context influences the appropriate use of information. This includes politics (Julnes and Holzer 2001) and organizational culture (Julnes and Holzer 2001; Landry et al. 2003). Julnes and Holzer (2001) find that internal and external interest groups affect adoption and implementation of policy recommendations. Organizational responses toward risk-taking, innovation and policy change mediate the impact of context on KM (Julnes and Holzer 2001: 697). Context is objective, and also perceived subjectively by policy-makers. Landry et al. (2003: 201) suggest that subjective factors (e.g., the perceived relevance of research to their agency and the policy issue in question, its direct applicability to agency policy, and the agency’s policy-making power) directly affect policy-makers’ use of information (and hence, the organization’s KM policies).

Differences in the professional cultures of academics and bureaucrats are also an important part of the larger social context. Landry et al. (2003: 195) surmise “that a difference between the culture of professionals and managers in government agencies and the culture of university researchers leads to a lack of communication between them and, consequently, to low levels of knowledge utilization.” These findings are supported by evidence of similar differences in the perspectives of producers and consumers of policy
research (Lomas 1997; Oh and Rich 1996; Rich 1997). Based on measurements of such linkage mechanisms as informal communication, conferences, e-mail, and agency’s reference library, Landry et al. (2003: 201) conclude that these two groups don’t interact well at building a social context conducive to sharing and communicating knowledge.

Third, human factors are important. Several researchers have found that such individual attributes as professionalism (Sabet and Klingner 1993), education (Landry et al. 2003) type of position education (Landry et al. 2003), and decision-making style (Webber 1987; Webber 1992) influence organizational policy adoption decisions. These findings are summarized in Figure 3 below:

Insert Figure 3 Here

Most governments have adopted new ways of relating to citizens through ICT, and other innovations designed to improve governance and government capacity (United Nations 2003; United Nations 2005). But the true measure of these innovations’ value lies in the effectiveness of shared information and transferred knowledge to attain societal goals like sustainable development. Effective information sharing depends on endogenous capacity to absorb innovations, which in turn is based on other factors. To foster development through IDA, organizations (public, private or NGO) must (United Nations 2005):

- Share information about innovations and outcomes (post or otherwise broadcast it).
- Provide incentives (economic and non-economic) that create competition among innovations (e.g., The Dubai Awards and UN Habitat).
• Use a combination of practical approaches pioneered by agencies like the Ash Institute and other awards program (e.g., the media, producing television programming, teaching- and practice-based case studies, networks of innovators, and a global portal based on an internationally acceptable taxonomy).
• Focus on the values/purposes/principles underlying innovation and emphasize these in resource material and documentation.
• Use credible and legitimate advocates (individuals and organizations) as intermediaries in the transfer process for specific innovations.
• Maintain a facilitative climate (i.e., a supportive policy environment, political leadership, environmental stability, and internal social structure and capacity).
• Use appropriate approaches, guidelines, and training and transfer methodologies.

**Summary and Conclusion:**

Technology transfer involves the use of shared information to improve organizational effectiveness or public policy outcomes. Conceptually, it involves the relationships among information, knowledge and wisdom. Operationally, it requires the creation and management of knowledge in learning organizations through a “knowledge spiral” by which individuals’ insights and innovations help the organization adapt to changing and challenging environments. On a more global scale, it involves the successful transplantation of “best practices” from their initial context to another region or country so as to achieve economic, social, political or environmental goals.

Viewed in both organizational and societal contexts, technology transfer requires an understanding of the conditions and factors that make successful adaptation of
endogenous technologies to exogenous situations, and the systematic development of
guidelines and methodologies for successful innovation diffusion and adoption.

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Figure 1: Attitudes Indispensable to the Management of Complexity

- First, a lively intellectual curiosity, an interest in everything – because everything really is related to everything else, and therefore to what you’re trying to do, whatever it is.
- Second, a genuine interest in what other people think, and why they think that way—which means you have to be at peace with yourself for a start.
- Third, a feeling of special responsibility for envisioning a future that’s different from a straight-line projection of the present. Trends are not destiny.
- Fourth, a hunch that most risks are there not to be avoided but to be taken.
- Fifth, a mindset that crises are normal, tensions can be promising, and complexity is fun.
- Sixth, a realization that paranoia and self-pity are reserved for people who don’t want to be leaders.
- Seventh, a sense of personal responsibility for the general outcome of your efforts.
- Eighth, a quality I call “unwarranted optimism” – the conviction that there must be some more upbeat outcome than would result from adding up all the available expert advice.
Figure 2: Stages of Influence on Policy Adoption

**Stage 1** Reception: “I received the university research pertinent to my work.”

**Stage 2** Cognition: “I read and understood the university research that I received.”

**Stage 3** Discussion: “I participated in meetings for discussion and popularization of the aforementioned university research.”

**Stage 4** Reference: “I cited university research studies as references in my own professional reports or documents.”

**Stage 5** Effort (adoption): “I made efforts to favor the use of university research results.”

**Stage 6** Influence: “University research results influenced decision in my administrative unit.”
**Figure 3: Factors Affecting Policy Adoption Decisions**

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<th>Contextual Factors:</th>
<th>Technical Factors:</th>
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<tr>
<td><strong>Political:</strong></td>
<td>Goal Orientation (Julnes and Holzer 2001)</td>
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<td>Internal Interest Groups (Julnes and Holzer 2001)</td>
<td>Information (Julnes and Holzer 2001)</td>
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<td>External Interest Groups (Julnes and Holzer 2001)</td>
<td>Resources (Julnes and Holzer 2001)</td>
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<td>Unions (Julnes and Holzer 2001)</td>
<td>Qualitative Products (Landry et al. 2003)</td>
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<td><strong>Organizational:</strong></td>
<td>Quantitative Products (Landry et al. 2003)</td>
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<tr>
<td>Risk Taking (Julnes and Holzer 2001)</td>
<td>Theoretical Products (Landry et al. 2003)</td>
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<td>Attitudes Towards Change (Julnes and Holzer 2001)</td>
<td>Focus on Advancement of Scholarly Knowledge (Landry et al. 2003)</td>
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<tr>
<td>Linkage Mechanisms (Landry et al. 2003)</td>
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