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Contextualizing Knowledge Sharing Strategy: The Case of an International Organization in the area of Development assistance

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Abstract: This paper proposes an operational evaluation grid which helps Organizations to determine the perception employees have about the degree of alignment between their Information System (IS) supporting knowledge sharing and different organizational culture contexts. Relying on this perception, Organizations can: (1) analyze barriers to a successful use of information system functionalities for greater efficiency of knowledge sharing and (2) identify appropriate IS functionalities they should invest on to increase the dynamic of knowledge sharing. A case study illustrates the use of our evaluation grid and the implications of this work are finally discussed at the end of this paper.

Keywords: knowledge sharing, knowledge management, information system, organizational culture, strategic alignment

1. Introduction

Information systems play an important role in the implementation of knowledge sharing strategies. They act as knowledge flow facilitators and can be used to encourage knowledge sharing which is an important challenge for organizations (Liebowitz 2008). From an Information System perspective, knowledge sharing strategy can be seen as the choice of a set of specific information system functionalities (and associated organizational rules) in order to support knowledge sharing activities.

Successful use of information system functionalities to support knowledge sharing is not only influenced by technical factors, but also by “less rational but highly influential” factors as cultural and organizational contexts (Dulipovici and Robey, 2013, Wiewiora and al. 2013, Leonardi and Treem 2012, Alavi and al. 2006). Various studies suggest that cultural and organizational contexts (organizational culture) shape employees’ knowledge sharing behaviors and the way they consider information systems to support knowledge sharing (Alavi and al. 2006, Gray and Densten 2005, De Long and Fahey 2000). However, few studies have attempted to investigate how cultural and organizational contexts might be associated with the technological choices to support knowledge sharing.

Relying on the “Competing Value Framework” described in §2.2., we propose in this paper an evaluation grid to assess the degree of alignment between Information System (IS) to support knowledge sharing and four organizational culture types. This grid helps identify which one of these four alternatives dominates the present Organization and then helps analyze barriers to a successful use of information system functionalities for greater efficiency of knowledge sharing.

The content of the paper is organized as follows: first, in section 2, we introduce the concept of knowledge and knowledge sharing in the Organization, as we consider it in this research. Then, we explain the reason of the proposed assessment grid and the bases on which it relies. In section 3, a classification of functionalities that may be offered by an information system in order to support knowledge sharing is proposed. Our evaluation grid is then presented as well as the assessment approach. Last, in section 4, we present a case study that illustrates the use of the proposed grid. Discussions and lessons learned from the application of our grid are then described. Finally, our conclusions are presented in section 5.

2. Literature review

The way we consider knowledge and knowledge sharing in the organization in this work is introduced in the first part of this section. Then, the theoretical bases of the assessment grid proposed are presented in the second part of this section.

2.1 Knowledge and knowledge sharing in the organization

In this article, we consider two types of knowledge:

- *explicited*, it can be made explicit, it is socially constructed, and it can be supported by information technologies. Individuals, as well as computers are “information processing systems” as said by Hornung (2009) (p. 9). Knowledge sharing strategies focusing on explicited knowledge attempt to increase organizational efficiencies by codifying and reusing knowledge mainly through advanced Information Technologies (Choi and al.2008).
- *tacit*, it is not always articulated and cannot always be articulated, relying on Polanyi (1958) notably: “we can know more than we can tell”. Tacit-oriented knowledge sharing strategies focus on the personalization approach where knowledge is communicated through direct person-to-person contact and through socialization processes (Choi and al.2008).

As highlighted by Davenport and Prusak (1998), knowledge is shared when (1) information is transmitted, (2) information is absorbed, i.e. interpreted into tacit knowledge through an individual cognitive process, and (3) when this piece of tacit knowledge is used, knowledge being linked to the action. For Davenport and Prusak (1998): “Transfer = Transmission + Absorption (and Use)” (p. 101). Knowledge sharing can then be defined as a process of knowledge transfer, through which an organization maintain complex and ambiguous knowledge and the associated routines (Szulanski 1998).

2.2 The “Competing Value Framework” to assess alignment between Information System to support knowledge sharing and Organizational Culture

Formal organizational context (structure and systems, sources of coordination and expertise) and cultural attributes of the organization affect efficiency of knowledge sharing (Burgelman 1983, Ghoshal and Barlett 1994, Wiewiora and al. 2013).

Gibson and Birkinshaw (2004) referred cultural and organizational contexts (Organizational culture) to the systems, processes, values and beliefs which collectively shape individual-level behaviors in any organization.

Various studies provide evidence to suggest that they are factors influencing knowledge sharing behaviors supported by information systems by shaping patterns and qualities of interactions needed to leverage knowledge among individuals (De long and Fahey 2000, Alavi and al. 2006, Gray and Densten 2005).

In this article, we explore the choice of appropriate Information System (IS) functionalities in order to support knowledge sharing (these functionalities are an expression of the knowledge sharing strategy of the Organization). We also study how this choice may be influenced by organizational culture, introducing then alignment of IS to support knowledge sharing strategy with organizational culture.

There are many theoretical and methodological frameworks which have been proposed to analyze cultural and organizational contexts (Hofstede 1990, Schein 1990, Denison and Spreitzer 1991, Cameron and Quinn 2005).

In our research, we make *the choice to use the “Competing Value Framework” (CVF)* developed by Cameron and Quinn (2005). The CVF has been validated in both international and Australian contexts (Lamond 2003). With this framework, Cultural and organizational contexts are assessed relying on two dimensions: *internal versus external* and *stability versus flexibility*. These dimensions lead to four cultural and organizational contexts types: Hierarchy, Clan, Adhocracy and Market. In the following, we assimilate “context” to “cultural and organizational context”.

It is important to underline that organizations are seldom characterized by a single context type but they tend to develop a dominant context over time in order to adapt themselves to environment changes (Cameron and Quinn 2005).

Hierarchy contexts are characterized by an internal orientation (inside the firm) and predictability. Here, the focus is on information management, documentation, expertise, formalization, stability, routines, centralization, continuity and control. Individuals are bounded through internal controls and they are governed by procedures. Principles of stability, formal rules are perceived as the cement of the organization.

In these contexts, there is a strong motivation for individuals to use functionalities for explicited knowledge storage because codification initiatives are encouraged and recognized. Formal communication and expert location functionalities are prioritized because recognition of expertise incites individuals to connect themselves with others and share their knowledge in order to increase their own social capital and then be attractive for assignments in need of their expertise (Alavi and al. 2006, Rodriguez-Elias 2008).

Clan contexts give importance to the development of a shared understanding and human relationships unless of relying exclusively on formal communication processes. These contexts are characterized by a flexible structure and an internal orientation. Individuals are tied by core values as participation, loyalty and engagement.

Individuals give more importance to communication and collaboration functionalities delivered by the information system to support knowledge sharing.

Adhocracy contexts share the same human values than clan contexts. They emphasize flexibility and external competitive position. Adhocracy contexts give importance to values as innovation, creativity, adaptability and acquisition of external resources. There are values which encourage local initiatives and make possible the emergence of formal and informal communities in the organization.

In adhocracy contexts, the IS is viewed as a vehicle which accelerates innovation via cross-pollination of ideas across communities (Alavi and al. 2006) and exploitation of knowledge from the external environment (De Long and Fahey 2000). Here, it seems relevant to give more importance to environment scanning (from formal and informal sources), storage (of information scanned from sources), communication and collaboration functionalities in the IS supporting knowledge sharing.

Market contexts are characterized by an external orientation (towards the market) and predictability. They emphasize on values such as competitiveness, productivity, goals clarity and efficiency. Individuals are bounded together through goal orientation and competition. Here, there is a tension between values: some of them incite to stability and predictability (controls, clear objectives) and others orient individuals towards an innovation attitude with a market orientation.

It is a state which can lead to divergent use of IS functionalities to support knowledge sharing. Some groups can focus on functionalities supporting knowledge accumulation (codification and storage functionalities) because they are guided by productivity and competition goals. Other groups can give more importance to socialization functionalities (communication, collaboration, and networking) in order to increase their innovation capacity.

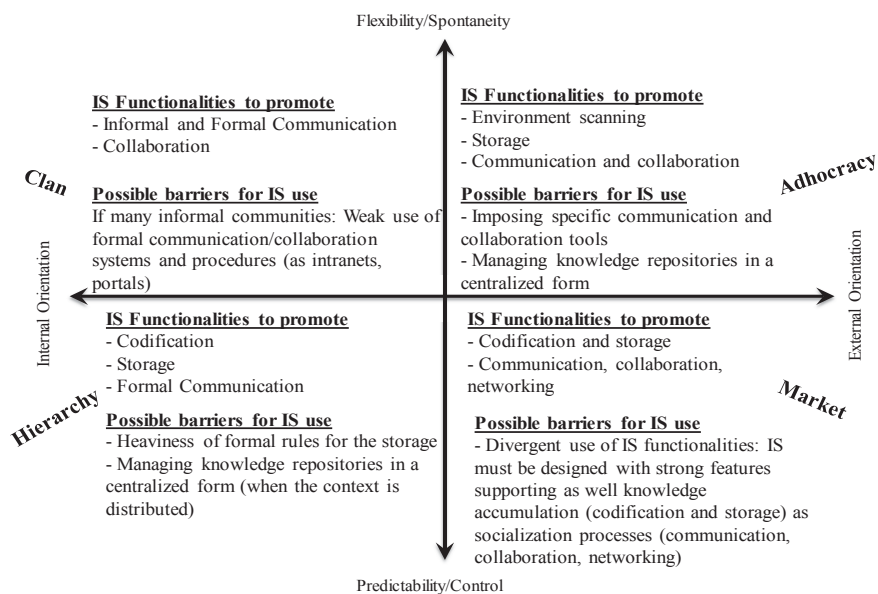


Figure 1: Aligning cultural and organizational contexts with information system to support knowledge sharing

The Competing Value Framework can help in the design of information systems to support knowledge sharing with features and functionalities fitting to the cultural and organization contexts they are to be embedded in (Tounkara and Arduin, 2014).

3. Propositions

The functionalities that may be offered by an information system in order to support knowledge sharing can be grouped into four complementary dimensions. These dimensions are studied in the first part of this section. Our evaluation grid is then presented as well as the assessment approach in the second part of this section.

3.1 Classification of Information System functionalities to support knowledge sharing

Many models to support knowledge sharing activities have been proposed (Nonaka and Takeuchi 1995, Szulanski 1998, Wiig 1993, Zack 1999, McElroy 1999, Dalkir 2011, Harrison and Hu 2012). Rodriguez-Elias and al. (2008) have made a relevant synthesis of knowledge management (KM) main activities involved in knowledge sharing with the two perspectives of tacit and explicit knowledge:

- *Identification* refers to the location of internal and/or external (from the environment) crucial knowledge and knowledge sources. Here, technologies can be useful to identify formal sources but also informal sources as experts and communities for example.
- *Codification* deals with formalization of knowledge identified as crucial. It can be difficult for some employees to know how to express their ideas. That is why it is convenient to identify information system functionalities that may facilitate codification of knowledge when possible (Rodriguez-Elias and al. 2008).
- *Storage activity* allows storing and updating explicit knowledge in knowledge repositories. This often requires much work from users to input their explicit knowledge and can lead to the situation where information system (IS) storage functionalities are unused. Providing automatic support at certain stages could reduce users' work.
- *Diffusion* refers to the dissemination, deployment of information source of knowledge. Diffusion of explicit knowledge may be enabled with mechanisms which allow providing information about explicit knowledge that have been stored (search engines, information retrieval systems, etc.). On the other hand, tacit knowledge diffusion can take place in socialization processes, and can be therefore supported by communication and collaboration technologies.
- *Acquisition activity* facilitates for individuals contextualization and interpretation of knowledge (tacit or explicit) to perform an activity, make a decision, etc. However, providing technologies to assist users in this activity can be a challenging job (Marwick 2001).

Implementing information system functionalities in order to support knowledge sharing is important but not enough to stimulate their use by individuals in the firm (Dulipovici and Robey 2013). Our literature review as much as our industrial fieldworks highlight the fact that cultural and organizational contexts can be successful factors (or barriers) in the use of functionalities designed in order to support knowledge sharing.

3.2 Evaluation grid

Relying on the Competing Value Framework described in §2.2., we propose an evaluation grid which focuses on four alternatives that corresponds to four views of alignment between Information System to support knowledge sharing and four organizational culture types, according to the present organization:

- A- IS alignment with Hierarchy culture
- B- IS alignment with Market culture
- C- IS alignment with Clan culture
- D- IS alignment with Adhocracy culture

This grid helps identify which one of these four alternatives dominates the present organizational IS culture. We use it also to measure what employees would like to see in the Organization, measuring then the desire for change.

To assess *alignment of IS functionalities supporting knowledge sharing with organizational culture*, we consider *five dimensions*:

- Dominant characteristics of IS to support knowledge sharing
- IS support for Identification of knowledge sources
- IS support for Codification
- Management of knowledge repositories (IS support for storage)
- IS support for diffusion and acquisition

Respondents have to rate each of these five dimensions by *dividing 10 points between the four alternatives (A, B, C and D)* depending on how similar the description is to their organization (see *appendix 1*).

Dominant characteristics of IS to support knowledge sharing

This dimension brings a global view on the degree of investment on IS codification and storage functionalities, the way knowledge repositories are managed, the type of knowledge diffused through IS, the type of IS communication and collaboration functionalities prioritized and the way they are delivered to individuals (formal/informal, personal/impersonal).

IS support for Identification of knowledge sources

Does the IS offers functionalities to locate internal and or external sources of information/knowledge (it can be formal sources as knowledge repositories but also informal sources as experts and communities)?

IS support for Codification

Is there an important investment on IS functionalities to facilitate codification of knowledge when possible? As examples, we can cite: content management functions, Knowledge elicitation assistance to formalize concepts, tasks, best practices, experiences, etc.

Are individuals strongly encouraged to use IS codification functionalities? Are knowledge codification contribution through IS recognized?

Management of knowledge repositories (storage)

Does the Organization make an important investment on knowledge repositories and functionalities as Information retrieval, Indexation and classification/categorization of explicated knowledge?

Do they manage their knowledge repositories in centralized or distributed form? Are there many formal rules for the storage of knowledge contributions?

IS support for knowledge diffusion and acquisition

Does the Organization focus on the diffusion of explicit knowledge, tacit knowledge or both? What type of IS communication and collaboration functionalities are prioritized: formal (as intranets and portals) or informal (informal communities via online chat, online meetings, discussion forums, etc.)? Does the Organization prioritize impersonal channel (knowledge repositories, intranets, portals), personal channel (information push based on individuals interests/profile, online communities, team rooms, etc.) or both?

4. Case study

The Organization under study is an international actor in the area of development assistance and capacity development. Its role is to help to achieve the eradication of poverty and the reduction of inequalities and exclusion by helping countries to develop policies, leadership skills, partnering abilities, institutional capabilities. This organization works in more than 150 countries.

Its organizational chart is subdivided into three levels:

- Global level with executive offices, Human resources office and Audit office
- Regional level with regional bureaus (Africa, Asia and Pacific, Arab States, Europe, Latin America and the Caribbean)
- Local level where are located country offices of each regional bureau

Knowledge management (KM) activities are streamlined to coordinate work at the global, regional and local levels and capture the knowledge generated by the country offices. Here, KM activities are important for development work, either directly through externally oriented evidence collection, analysis, knowledge capture, generation and sharing or indirectly by improving organizational effectiveness and efficiency and fostering a culture of learning and sharing.

4.1 Data collection

First, a trial survey was conducted using printed questionnaires to assess if the enquiry process and answering could be easily understood and complied with. The respondents confirmed that the questions were easily understandable and the document was easy to fulfill.

Second, the questionnaire was made available to 170 employees at the three organizational levels (Global, regional and local) through a web-based version. They had a two-week survey period to enter their responses and make their comments. *An extract of the questionnaire is presented in Appendix 1.*

4.2 Results and comments

Among the 170 employees targeted, 125 (73%) members have started to complete the questionnaire and 103 (60%) have completed it fully (Table 1).

Table 1: Respondents

	Respondents targeted	Responses
Global level (executive offices)	40	35
Régional level	60	28
local level (country offices)	70	40
Total number of employees	170	103

Table 2: Summary of mean IS profile scores

Mean results	Hierarchy			Market			Clan			Adhocracy		
	Now	Preferred	Variance	Now	Preferred	Variance	Now	Preferred	Variance	Now	Preferred	Variance
Dominant IS characteristics for knowledge transfer	1,33	2,14	0,81	1,42	2,41	0,99	4,48	1,18	-3,3	2,77	4,27	1,5
IS support for Identification of knowledge sources	5,35	1,23	-4,12	2,27	1,35	-0,92	1,13	2,24	1,11	1,25	5,18	3,93
IS support for codification	1,12	2,21	1,09	1,1	5,29	4,19	5,03	1,42	-3,61	2,75	1,08	-1,67
Management of knowledge repositories (Storage)	1,19	1,5	0,31	1,35	5,04	3,69	6,15	1,07	-5,08	1,31	2,39	1,08
IS support for knowledge diffusion and acquisition	1,07	0,77	-0,3	1,2	2,06	0,86	5	3,06	-1,94	2,73	4,11	1,38

The mean scores collected from the questionnaires are summarized in Table 2. Scores for each dimension are visualized through radar diagrams (Figures 2-6) to make interpretations easier. Comments added by respondents (in the questionnaire) help us justify their preferences and also describe the change than can be operated to fit with what they thought was needed.

Figure 2 gives information about the contrast between the global current profile of “IS alignment with organizational culture” and the respondents ‘preferred profile.

Figures 3-6 bring more details and precisions about this contrast for others IS dimensions. They highlight two level of strong preference:

- A preference for an “IS alignment with Adhocracy culture” to support expertise identification and knowledge diffusion and acquisition
- A preference for an “IS alignment with Market culture” to support knowledge capture, codification and storage

Integrating knowledge networking and knowledge codification functionalities

Figure 2 reproduces the current and global profile of “IS alignment with organizational culture” to support knowledge transfer in contrast with the respondents ‘preferred profile for the future. This shows a clear preference to evolve from an “IS alignment with Clan culture” to an “IS co-alignment with Adhocracy and Market cultures” to support knowledge sharing.

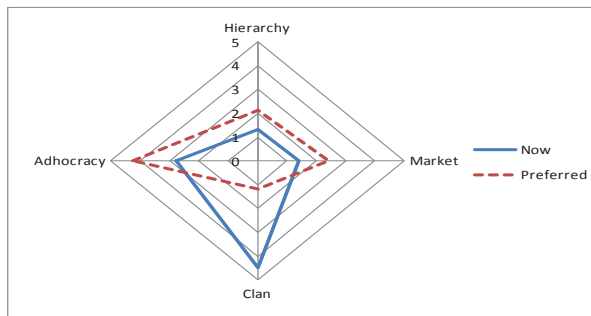


Figure 2: Dominant characteristics of IS to support knowledge sharing

The organization knowledge sharing strategy is people-centered rather than document-centered, with processes and technology being supportive functions. It is an Organization very advanced in the area of “formal networking” and less in the area of “capturing knowledge” with a codification approach. Its use of online communities of practice is recognized as an effective means of sharing.

For respondents, the system of capturing and transferring experiential and organizational knowledge needs to be stronger. New formal processes and IT support to capture tacit knowledge and make it available need to be introduced.

IS to support knowledge sharing can be strengthened with a *control approach* allowing a regular monitoring of sharing effectiveness. This can be done by building measurable indicators and reporting on how lessons learned and best practices are used to improve organizational activities.

Towards Expertise rosters

Figure 3 shows a preference for an “*IS alignment with adhocracy culture*” to support identification of knowledge sources.

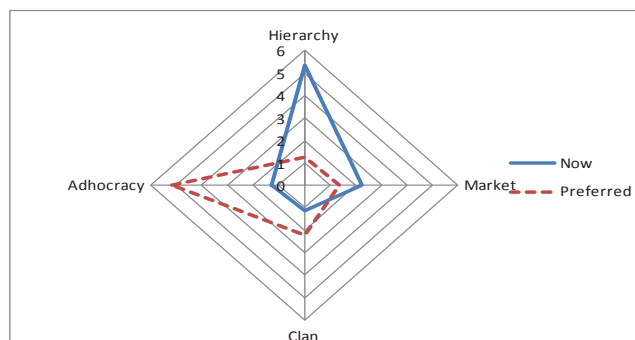


Figure 3: IS support for identification of knowledge sources

The potential for identification (and management) of expertise is underutilized. The Organization does not analyze what knowledge it needs, and what expertise it therefore needs to develop internally, or import through recruitment for example.

A supportive function for expertise identification (an open wide expertise Roster) can provide universal access for business units to pool of expertise, allow the organization to draw from a pool of qualified practitioners and experts at any time, mobilize staff members to be available for ad-hoc initiatives and virtual projects.

Lessons Learned Database

Figures 4-5 show a preference for an “*IS alignment with Market culture*” to support knowledge capture, codification and storage.

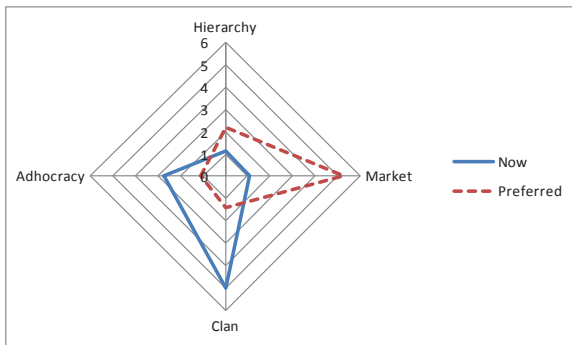


Figure 4: IS support for codification

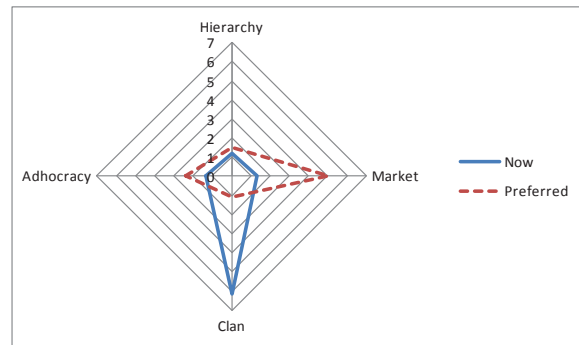


Figure 5: Management of knowledge repositories

Respondents have given lowest scores for the dimension “IS Support for codification”. Knowledge codification takes place under formal, lengthy reports and guidance notes for which the impact is unknown. It is not define a project cycle and IT support to capture lessons and with an aim of reuse, not simply project reporting and closure.

For respondents, the organization must put systems (including but not limited to a searchable lessons learned repository) in place and link them to each other to ensure that throughout their lifecycle, projects will systematically capture, codify and disseminate experiences and lessons to inject them back into project processes. Moreover, indexation, information retrieval and other content management functions to store/classify (in database) and access to these lessons learned must be implemented.

Enhancing knowledge networking and knowledge acquisition capacity

Figure 6 shows a preference for an “IS alignment with adhocracy culture” to support knowledge diffusion and acquisition.

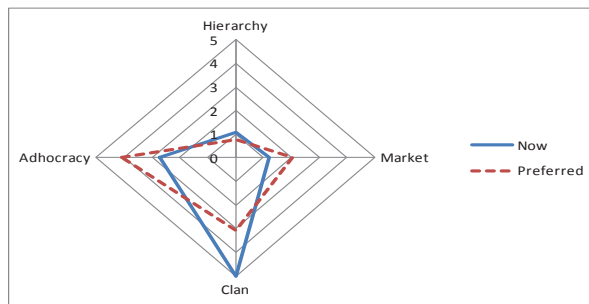


Figure 6: IS support for Diffusion and Acquisition

With Communities of Practices (COPs) and teamworks, the Organization has created a very advanced corporate peer-to-peer platform, connecting practitioners across regions, flattening hierarchies and increasing exchange among employees.

For respondents, the Organization must create further opportunities with public dialogue and crowd-sourcing. IS must support sharing initiatives between the Organization and the public by providing “Online Dialogues” functions and mechanisms for rigorous public feedback to iterate and replicate initiatives that find traction in the marketplace of the international development community.

Teamworks and Communities of Practices can be solidified for consistent knowledge networking by integrating them with various internal and external business knowledge sharing applications that can be built (online consultations, lessons learned databases, expertise location, training facilitation, etc.), the existing central repository of the knowledge products, the intranet, the public website

Respondents suggest also that the organization should strengthen its statistical analysis and social network analysis capacities for business intelligence and data-driven decision making, enhancing then its knowledge acquisition and creation capacity.

5. Conclusions

The main contribution of this paper is the elaboration of an evaluation grid which helps Organizations to determine the perception employees have about the degree of alignment of their Information system (IS)

supporting knowledge sharing with different Organizational culture contexts. Relying on this perception, Organizations can: (1) analyze barriers to a successful use of information system functionalities for greater efficiency of knowledge sharing and (2) identify appropriate IS functionalities they should invest on to increase the dynamic of knowledge sharing.

The case study we have performed in an international Organization in the area of development assistance and capacity development has validated the applicability of the evaluation grid and its utility to make evolve IS functionalities for more efficiency of knowledge sharing.

In this case, the current Information System to support knowledge sharing is perceived by employees as being strongly aligned with a Clan culture. The questionnaire helps identify a clear preference for employees to evolve from an "IS alignment with Clan culture" to an "IS *co-alignment with Adhocracy and Market cultures*" to support knowledge sharing.

The evaluation grid does not say if changes should be made but only dresses a picture of perceptions and preferences of employees about IS alignment with organizational culture. For changes, larger and deeper analysis must be done to see: whether there is a shared perception of need for change; whether the climate is supportive or not (i.e., encouraging open debate and trust); and whether or not powerful subcultures and countercultures exist.

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Appendix 1: Assessment grid of IS Alignment with organizational culture (extract)

In completing this questionnaire you are providing a picture of how the Information System (IS) of your organization supports knowledge transfer and the values that characterize it. There are no good or wrong answers as every organization and individual will produce a different set of answers. Just be as accurate as you can.

Please rate each of the statements by dividing 10 points between A, B, C and D depending on how similar the description is to your organization. (10 is very similar and 0 is not at all similar to this firm). The total points for each question must equal 10. Rate for both how you feel the firm is now (NOW) and how you think it should be (PREFERRED).

For example, in question 1, assume that you gave 7 points to A, 1 points to B, 2 points to C, and 0 points to D in the 'NOW' column. This would indicate that the Information System of the organization fits predominantly with a hierarchy-culture focusing on information management, documentation, expertise, formalization, stability, routines, centralization, continuity and control. Assume that you gave 2.5 points to each one in the 'PREFERRED' column. This would indicate you would prefer for these Information System attributes to be exactly equal. You may only use four numbers that total 10 in each column.

Here is how you might rate the Information System attributes of your organization 'NOW' and how you might 'PREFER' the Information System to be sometime in the future.

1	Dominant IS Characteristics for knowledge transfer	NOW	PREFERRED
A.	The Organization gives importance to functionalities that support knowledge codification/formalization, formal communication and expert location.		
B.	The Organization gives importance either to functionalities supporting knowledge accumulation (codification and storage functionalities) to socialization functionalities (communication, collaboration, and networking)		
C.	The Organization gives importance to communication and collaboration functionalities to support knowledge sharing.		
D.	The Organization gives importance to environment scanning (from formal and informal sources), storage (of information scanned from sources), and communication and collaboration functionalities.		
	Total		