Management international
International Management
Gestiòn Internacional

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Understanding Technology Adoption from the "Multiple Cultures Perspective": The Case of a Successful Post-Implementation Recovery

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RÉSUMÉ

Le but de cet article est d'explorer la pertinence de *"la perspective de cultures multiples"* dans le contexte de l'adoption d'une technologie. Les partisans de ce point de vue soutiennent que les personnes sont empreintes de valeurs diverses et parfois contradictoires, parmi lesquelles certaines seront plus saillantes que d'autres dans un contexte donné. Nous montrons comment l'évolution des valeurs saillantes de certains utilisateurs finaux a permis de sauver de l'échec un projet ERP chez un équipementier automobile français. Nos résultats montrent comment une vision moins déterministe de la résistance culturelle à l'égard des ERP peut aider les différents acteurs à atteindre leurs objectifs.

Mots-clés : Management des opérations, Technologie de l'information, Management interculturel, « perspective de cultures multiples », ERP

ABSTRACT

The purpose of this article is to explore the pertinence of the *"multiple cultures perspective"* in the context of technology adoption. Proponents of this perspective assert that people are shaped by diverse and sometimes conflicting values, any of which will be more salient than others in a given context. We show how the changing salience of some end-users' values helped salvage a disastrous ERP project at a French auto parts company. Our findings show how a less deterministic vision of cultural resistance to ERP systems can help organizations achieve their objectives.

Keywords: Operations management, information technology, intercultural management, **"**multiple cultures perspective", ERP

RESUMEN

El objetivo de este artículo consiste en explorar la pertinencia de la *"perspectiva de culturas múltiples"* en el contexto de la adopción de una tecnología. Los partidarios de este punto de vista sostienen que las personas están impregnadas de valores diversos y a veces contradictorios, entre los cuales se destacan algunos que serán más relevantes en un contexto dado. Mostramos cómo la evolución de los valores relevantes de ciertos usuarios finales permitió salvar del fracaso un proyecto de implementación de un ERP para un fabricante de equipos de automóviles Francés. Nuestros resultados muestran cómo una visión menos determinista de la resistencia cultural con respecto al ERP puede ayudar a los diferentes actores a alcanzar sus objetivos.

Palabras claves: Gestión de las operaciones, Tecnología de la información, Gestión intercultural, "Perspectiva de culturas múltiples", ERP

The successful implementation of Enterprise Resource Planning (ERP) systems is vital to the performance of global firms, and yet many ERP projects run into trouble at some point (Azan and Beldi, 2009; Burton-Jones and Gallivan, 2007; Davenport *et al.*, 2004; Gwillim *et al.*, 2005; Saint-Léger and El Amrani, 2011). One of the potential causes of failure that have been identified in the literature is the clash of values linked to information technology (IT) with the values of IT end-users, raising questions of cross-cultural management. Designers of Enterprise Resource Planning (ERP) systems, for example, assume that end-users will adopt a linear vision of time and a culture of open information-sharing, which is not always the case. By the same token, end-users from "particularist" cultures who emphasize relationship-building and customized handling of problems (Trompenaars, 1998) must accept the "universalist"-oriented standardization of information systems. For this reason, researchers in both IT and cross-cultural management need to understand the impact of cultural differences on technology adoption.

According to the multiple cultures perspective (Sackmann *et al.,* 1997), each individual is the product of many different, often competing values, any of which can become salient in a given context. In much of cross-cultural research, scholars tend to look for aggregate patterns of behavior using subunits, nations, or organizations as the unit of analysis (see Leidner, 2006, for a review of studies at these levels), but in so doing, they may have missed the diversity of values which characterize each individual. To be sure, individuals are shaped by the groups to which they belong just as they shape those groups (Giddens, 1984), but they typically identify with a range of groups – national, ethnic, religious, political,

professional, organizational, etc. – and are influenced to varying degrees by factors such as life experience, wealth, bicultural origins, education, or gender (Gallivan and Srite, 2005). Classifying them by national or organizational culture is unlikely to tell the whole story.

In this article, we examine the pertinence of the multiple cultures perspective as a tool for understanding how the personal values and profiles of a group of IT users favored their emergence as the driving force behind the turnaround of a failed Enterprise Resource Planning (ERP) project. We begin by discussing the multiple cultures perspective in the literature, applying it to the context of technology adoption. In the second part, we report our findings in a case study involving an ERP project during the post-implementation phase, using data which were collected and analyzed following the Socio-Economic Approach to Management. In the third and final part, we discuss the implications of our findings for managers of IT projects, insisting on the contribution of the multiple cultures perspective to our understanding of IT projects and cultural values.

The multiple cultures perspective in cross-cultural and IT literature

We define culture as systems of shared norms, values, and practices (Schein, 1985) capable of evolving in time (Hatch, 1993), and which may be national, regional, organizational, ethnic, or linked to social and professional circles (Sackmann *et al.,* 1997). The flexibility and scope of this definition reflects the view that (a) social actors are not bound to one set of beliefs for all time, and (b) as they interact with their changing environment, they naturally become the product of more than one value system. The way individuals respond to these personal conflicting values is of vital interest to managers of culturally mixed groups, such as IT project teams and IT end-users.

The question of whether cultures are stable or changing over time has captured the attention of researchers for several decades, and it is indeed one of the keys to understanding and resolving cross-cultural misunderstanding and conflict (D'Iribarne, 2009). From the pioneering works of Hall (1976) and Hofstede (1980) who depicted cultures as relatively stable, to the more recent literature on the stable *and* dynamic nature of culture (Hatch, 1993; Sackmann and Phillips, 2004; Leidner and Kayworth, 2006; Walsham, 2002), cross-cultural theorists have progressively enriched our vision of the processes underlying intercultural relations. According to Sackmann *et al.* (1997), there are three main research streams in cross-cultural management literature: Cross-national comparison, intercultural interaction, and the multiple cultures perspective. In this section, we briefly describe each of these approaches in order to show how the concept of multiple cultures fits into existing research on the impact of culture on IT projects.

Culture as a stable, measurable phenomenon

The first of the three streams is cross-national comparison, or the "national culture paradigm", of which Hall's (1976) and Hofstede's (1980) early works provide some of the best known examples. Proponents of this approach see culture as objectively measurable, territorially bound, and relatively stable over time. Whether they define culture as "collective programming" (Hofstede and Hofstede, 2005) or as a succession of "layers" consisting of observable artifacts and less observable norms and assumptions (Schein, 1985), proponents of the national culture perspective consider culture to be deeply-rooted and relatively resistant to outside influences. According to this perspective, cross-cultural encounters can be managed by acknowledging and accommodating differences, rather than by a strategy of acculturation.

Much of IT – culture research carried out in the nineties and early twenty-first century was based on this vision of culture as stable and measurable (Krumbholz and Maiden, 2001; Myers and Tan, 2002; Walsham, 2002). Hanisch *et al.* (2001), for example, showed how high power distance and a collectivist mindset in Thailand impacted software development, with the assumption that Thai values will interfere with successful software development projects if they are not properly addressed. In separate studies, Soh *et al.* (2000) and Shanks *et al.* (2000) examined cultural "fit and misfit" in IT projects in Asia, concluding that cultural dimensions were determining factors that could make the difference between a successful or a failed project.

Culture as a dynamic, ever-evolving phenomenon

This rather deterministic, static representation of culture has been challenged by other theorists, including IT scholars (Myers and Tan, 2002, Walsham, 2002), who call for "theories [on culture] that reflect change as well as stability, and that are attuned to shifts in attitudes and actions as well as their continuance" (Walsham, 2002, p. 377). The second research stream described by Sackmann *et al.* (1997), intercultural interaction, reflects this call for a more dynamic vision of culture. Although intercultural interactionists do not completely reject the pertinence of cultural dimensions or the relative stability of cultures, they insist on the ability of social actors to change over time as they interact with people of other cultures (Sackmann and Phillips, 2004; Soderberg and Holden, 2002).

Examples of this approach are abundant in IT – culture literature. Cramton and Hinds (2005), for example, describe the way Indian software engineers readjusted their behavior and their priorities as they sought to meet the expectations of German managers during a software development project, instead of conforming to positivist descriptions of Indian cultural traits. Similarly, Hill *et al.* (1998) has studied the attitudes of young Arabs in the US in the context of information technology transfer, concluding that although many young Arabs share some basic Arab values, the general

picture is more complicated due to their interaction with American society. Walsham's (2002) analysis of a case of technology transfer from the US to India also showed that Indians did not behave according to established cultural dimensions, nor did they react in a homogeneous fashion. In other words, national culture is not always the salient factor in IT adoption, and social actors' cultural values are not frozen in place.

One of the most interesting concepts to emerge from intercultural interaction research is "negotiated culture". This theory offers insight into the way in which people's values may evolve as a result of interaction with other cultures (Brannen and Salk, 2000; Walsham, 2002). Adapted from Anselm Strauss' concept of "negotiated order" which asserts that all social order is the result of negotiations between social actors at every instant, the negotiated culture theory describes the ability of culturally different people to continually adjust their behavior to reach mutual goals. By emphasizing those traits which reinforce shared understanding and avoiding those that block cooperation, they gradually create a shared culture which is neither a 50-50 compromise nor the product of the dominant partner. Elements of this theory are found in the multiple cultures perspective, as we shall see.

Multiple cultures within each individual

The third and final research stream is the concept of multiple cultures, which we examine in this article. As Sackmann *et al.* (1997) point out, this perspective has developed along with and because of increasingly dense global connections, both electronic and face to face, resulting in a less simplistic vision of cultural behavior. The intercultural interaction and multiple cultures perspectives share an emphasis on the interconnection between social actors and the context, and reject the focus on national cultural as a primary indicator of cultural values. What distinguishes the multiple cultures perspective from other research streams is its assumption that individuals identify with the values of several overlapping "cultures", any of which may become salient within a given context.

The concept of multiple cultures contributes to a more nuanced vision of the impact of cultural values on IT adoption. A person's values may be shaped by his or her interaction with groups such as organizations, ethnic communities, trade unions, professional circles, and even age groups, resulting in a less predictable reaction to cultural differences than has been reported in the cross-national comparison literature (Sackmann *et al.*, 1997). For example, IT users who are comfortable with technology and identify with the values promoted by ERP systems such as forward planning and rigorous record-keeping might be expected to respond positively to the deployment of a new IT tool. However, according to the multiple cultures paradigm, the users' strong identification with IT values may not be the salient factor in this context. They may be motivated by their trade union values

and resist the introduction of IT systems which they fear will lead to the loss of jobs, or by their cultural upbringing which emphasizes oral tradition in information-sharing. In short, linking outcomes of IT projects to group-level cultural dimensions can be misleading in many cases.

The emphasis on individuals' diverse systems of values can also be found in the "Spinning Top Model" proposed by Walsh and Kéfi (2008). In their model, an individual's multiple beliefs and values form vertical layers around a central core, resembling the shape of a top. The spinning motion of the top captures the dynamic activation and de-activation of the individual's values as a result of changes in context and contact with other value systems. Taking the example of the trade union representative mentioned above, the spinning top could alternatively reflect the person's identification with IT values, values linked to union membership, and life in a culture with an oral tradition, in a continuous movement in which the IT culture is sometimes, but not always, the salient value.

The concept of "multiple cultures" is also comparable to Gallivan and Srite's "multiple identity layers" (2005) derived from Social Identity Theory (Tajfel and Turner, 1979), as both concepts emphasize the diversity of values which individuals may espouse. However, the representation of values in the "multiple identity layers" model is somewhat more deterministic than that of the multiple cultures perspective, as the different systems of values are seen as fixed and embedded. In addition, an emphasis on identity and self-categorization can lead to assumptions about in-group and out-group behavior that neglect the dynamic capability of members of an organization to identify with more than one set of values, including those of one's company or colleagues. This point is crucial for our understanding of the role of multiple cultures in IT adoption. Indeed, it has been shown that if managers recognize and encourage values that are shared by most participants in an IT project, and downplay or discourage those which divide the group members, the chances of obtaining the cooperation of team members will be greater (Hinds and Mortensen, 2005).

We see then that not only are multiple values at play within each participant in a cross-cultural context, but that ***they can be managed***. This is because IT teams and IT end-users are not prisoners of their initial mindsets. Although they are shaped or constrained by their environment, they also have the ability to act upon it (Giddens, 1984). Most importantly, the existence of overlapping multiple cultures within each project member becomes an opportunity, particularly as some of the "non-IT" cultural values may be more salient than the IT-based ones.

Empirical results

The ultimate interest of the multiple cultures perspective for IT theory and practice is the solutions it offers for managers confronted with resistance to IT tools. In this section we

report the results of our analysis of a disastrous ERP implementation project from the perspective of multiple cultures, showing how the personal values of the participants during the preparation and rollout of the ERP were different from those values which played a role in the solution that emerged during the post-implementation phase.

Methodology

The case we examine involves an ERP project which took place in the early 2000's over a period of almost three years. This case was first published to shed light on the processes and change management policies at the organizational level which led to the salvaging of the failing ERP project (Saint-Léger, 2004). More recently, aspects of the case were explored to determine the role played by cultural factors at the group level in the success of the turnaround (Saint-Léger and Beeler, 2012). In particular, we identified the conditions under which culturally diverse groups such as IT end-users and IT experts were able to "negotiate" a shared culture, and the implications of shared or negotiated cultures for managers of ERP projects. Building on those results, we wanted to know more about the cultural factor at the individual level, and specifically, whether there is a link between the multiple value systems within each participant who helped salvage the ERP project and the positive role played by those individuals. We ultimately sought to determine what a better understanding of the changing salience of individuals' values, which is the basic premise of the multiple cultures perspective, could teach us about managing culturally diverse teams.

Data were gathered and analyzed using the Socio-Economic Approach to Management (SEAM) which has been tested in countries all over the world and constantly refined since the early 1970's at the research laboratory of the Institut de Socio-Economie des Entreprises et des Organisations (ISEOR) (Savall, 1975; Savall and Zardet, 2004). SEAM is based on the principle that companies can achieve their objectives and avoid failure – in our case, the derailing of an ERP project – by detecting the underlying causes of dysfunctions and enabling a change-oriented culture at all levels of the organization. As a detailed presentation of the theory and practice of SEAM would take more space than is available here and exceed the scope of the present enquiry, we will limit our overview to the principles of SEAM data collection and content analysis which guided our study. (For a more comprehensive account of the Socio-Economic Approach to Management, see Savall, 2007.)

According to Socio-Economic theory from which SEAM is derived, the smooth performance of a company depends on the alignment of its structures (which can be physical, technological, organizational, demographic, or mental) with the various behaviors within the company at the group and individual level. Problems arise when structures and behaviors are not properly synchronized, resulting in dysfunctions which lead to hidden costs and poor performance. The first step of the SEAM approach is therefore to help the organization discover the root causes of those dysfunctions.

The SEAM approach to data collection and analysis

The process of revealing the root causes of poor performance begins with a diagnostic carried out by a SEAM-trained researcher working within the organization as a "researcher-intervener" for the duration of the project. Being an insider not only enriches the intervener's understanding of the organization's problems; it also helps establish a climate of confidence in which the researcher-intervener and project members can co-construct a plan of action and share findings.

During the first phase of a typical SEAM intervention, members of top management are interviewed extensively to ensure that they fully support the project, and to solicit their assessment of the internal organizational performance. Field-notes are taken in the form of quotes which are coded according to categories of dysfunctions recorded in a database developed by ISEOR over the years during thousands of hours of intervention. The company's financial statements, status reports, and internal documents are also taken into account.

The results of the analysis of the company's hidden potential are reported to the company's management team using a technique called the "mirror effect" which entails "mirroring back" the quotes provided by the senior managers, in order to point to dysfunctions that need to be addressed. This method of basing the audit on the managers' own words produces a greater acceptance of the intervener's assessment than traditional feedback from an outsider. Next, the intervener repeats the process of interviewing, quote-collecting, coding, and analysis, this time with employees at all levels of the organization or business unit. Once again, the "mirror-effect" is applied, triggering an awareness of the gap between the existing situation and what they could be achieving. This, in turn, creates a reaction of "buy-in" on the part of all the participants.

The application of SEAM to our case

One of the authors of this study was an ISEOR-trained "researcher-intervener" who was called in to help resolve the difficulties the company was experiencing with its two-year old ERP system. He interacted with the management and employees on a part-time basis from 2001 to 2004 as he worked to put the ERP system back on track. Quantitative and financial data provided by teams working in systems information, management control, and production were used to analyze the poor performance of the ERP system and were reported in an earlier study (Saint-Léger, 2004). In our exploration of the impact of individuals' multiple cultures on their attitudes toward the project, we relied heavily on qualitative data gathered from field-notes taken during meetings, informal conversations, and in-depth interviews, as well as on

TABLE 1

Number of interviews conducted and meetings attended over the three-year period

Data Collection	Senior Management	Middle Management	Project Team	End-Users
– Informal interviews	50	200	300	300
– Semi-structures interviews – Participation in project-related meetings	30	100	130	200

our analysis of internal documents. Table 1 above shows an estimate of the number of informal project-related discussions, semi-structured interviews, and project-related meetings that took place during the post-implementation turnaround.

THE CASE OF A FAILING ERP PROJECT AND THE ROLE OF MULTIPLE CULTURES IN ITS RECOVERY

The company we studied is a midsized multinational producer of electrical automobile components (1000 employees) located in France, which we will call Ferguson to protect its identity. The company has business units and suppliers in several countries, and at the time, was struggling to manage its huge inventory. Although the deployment of the ERP system was considered to be a priority, two years after the deployment, the ERP was far from performing at an acceptable level. The researcher-intervener had worked on several ERP projects in the past, but this was his first encounter with a post-implementation project in trouble that he had not observed from the start and he had very limited information as to what had gone wrong or at what point.

The first step was to find out from the senior and middle managers and end-users what they thought had caused the problem, using the SEAM approach described above: First, he solicited the assessment of the actors themselves, taking field-notes in the form of quotes. He then studied their information and linked their own words to key-words corresponding to SEAM categories of dysfunctions. Thanks to the quotes, he began to uncover the root causes of the failure of the project, the most important of which were the users' lack of trust in the system due to the senior management's negligence of the human and cultural factors during the preparation and rollout, as well as poor cross-functional communication and coordination without which the ERP could not function properly. This lack of trust resulted in the employees' rejection of the ERP.

The next step was to provide the participants with his assessment of the situation by "mirroring" their own insights back to them and showing them the connection between these insights and the deplorable state of the project. This allowed them not only to see their own role in the derailing of the project, but also to see how they could contribute to turning

it around. The turnaround took roughly one year, with progress only possible as the employees came to appreciate the improved results and the sharing of reliable information. It had become evident that the many bugs in the system that had plagued them were the result of the employees' sloppy input and lack of regard for the demands of the system.

Although a discussion of all the measures taken to restore efficient communication, coordination, and cooperation are beyond the scope of this study (see Saint-Léger and Beeler, 2012, for a detailed chart of the measures taken), it is important to note at this point that two of the measures allowed for a gradual changing salience of the values of certain employees: the management's increased recognition of the importance of the project and the setting up of feedback sessions in which the end-users could voice their concerns and share their experiences. Thanks to these sessions, a small cross-functional group of motivated employees, 14 out of the roughly 100 unit members, began to work with the researcher-intervener to move the project forward, helping the researcher-intervener re-establish a climate of cooperation, better communication practices, and a more efficient system of coordination.

In time, the informal group of trouble-shooters became a recognized "Competency Center" (CC) to whom the workforce at Ferguson could turn for guidance. To learn more about the factors which contributed to the "take-charge" attitude of some members and the passivity or resistance of others, the researcher-intervener convened the participants and solicited their feedback. From his discussions and the quotes that he gathered (the most representative of which are provided in the next section), it became evident that certain values and mindsets had prevented them from embracing the project during the implementation phase of the project, while other values and another mindset had been "activated" during the post-phase.

This conclusion provided us with the opportunity to test the pertinence of the multiple cultures perspective in the context of this ERP project. Indeed, the notion that end-users are the product of more than one set of values, and that the salience of any of those values may change depending on the circumstances, has implications for the way in which IT managers and researchers might better handle the cultural resistance of end-users to ERP systems.

CLASSIFICATION OF THE MEMBERS OF THE CC FROM THE MULTIPLE CULTURES PERSPECTIVE

In order to examine the multiple values of the CC participants, we first drew up a list of characteristics that may have influenced their behavior and values using the field-quotes of the researcher-intervener. These included their nationality, sex, history in the company, technological expertise, and organizational values. The organizational values were drawn from the cultural dimensions most often identified in the literature (Schein,1985; Hofstede, 1980; Trompenaars and Hampden-Turner 1998; and Hall,1976). This information yielded four main categories:

- A. Personal background
- B. Cultural values shared by the members
- C. Familiarity with technical and technological issues
- D. Personal drive and determination

A further refinement of these categories yielded 26 subcategories (27 including their nationality) which are shown on Table 2.

The letters corresponding to the four categories above (A, B, C, D) are indicated in the fourth column, and their subcategories, numbered from [N° 0] to [N° 26], appear in the second column. The positions in the company held by the volunteers are indicated at the top of the chart and show that the group was cross-functional, specializing in a range of forms of expertise. This variety made it difficult for one identity or one cultural group to dominate the others: Each could expect to be recognized for his or her contribution to the outcome.

The values are indicated either in the form of alternatives such as "task-oriented" vs. "relationship-oriented", or by degree of intensity from 1 (very weak) to 4 (very strong). The values reported on the chart, like the choice of categories and subcategories, are based on discussions between the researcher and the CC members, as well as on the researcher's personal observations between 2001 and 2004. We discuss the values associated with each category and their implications for our study below, providing quotes that illustrate the point of view of the CC members.

A: Personal background [N° 0 - 5]

All of the 14 volunteers were French [N° 0] and 10 of them were relatively experienced in their jobs [N° 2]. The 6 to 8 ratio of women to men [N° 3] seems to suggest that both sexes were well represented in this industrial environment. 11 of the members were either supervisors or operational managers [N° 1], and 10 of the 14 had reached their current position through an in-house promotion [N° 5]. These characteristics are coherent with some of the values discussed below such as company loyalty and a "take-charge attitude".

B: Cultural values shared by the members of the CC [N° 6 - 12]

Several of the values observed by the researcher-intervener during the post-phase reflected an adaptability to new circumstances and dedication to their mission as well as to their colleagues. The first value was *a willingness to accept criticism and adopt new ways of functioning* [N° 7]. Openness to new ways may be one of the most salient values that helped to turn the project around. One of the members explained the feeling of the whole group, "The ERP poses a real challenge, but we've got to get it right. The inventory is in a real mess."

Company loyalty was stronger than personal goals [N° 5]. 12 of the 14 members showed more loyalty to the company and its goals than to personal motivations. This confidence was extended to the ERP tool itself, which they were convinced could help improve processes and working conditions at Ferguson. Not surprisingly, as the CC gained recognition and overcame obstacles together, *the members showed strong to very strong loyalty to the in-group* [N° 10], which is to say, the CC. As one member declared to the researcher-intervener, "I trust these guys. I know I can count on them. We see things the same way."

We see on the chart that 9 of the 14 members were task-oriented, while only 4 were relationship-oriented [N° 8]. Whatever the reason for their initial passivity, the members of this group had begun to see the ERP project as a priority. The following quotes from the researcher-intervener's field-notes sums up the attitude of most of the group: "We just kept working at it until we finally caught on to the logic of it." "We were determined to show top management that we weren't as incompetent as they thought."

Finally, 9 out of 14 members showed a preference for frank, upfront exchanges to formal, procedural, written communication [N° 12]. This preference is evident in the comment of one CC member: "When we run into trouble, we work it out among ourselves or ask one of the guys in another department." This is not to say that the members avoided formal communication altogether; rather they needed to communicate informally in this context as it suited the urgency of the situation. Under more stable conditions, they may have shown more of a preference for formal procedures.

C: Familiarity with technical and technological issues [N° 13 - 19]

As can be seen in many of the quotes provided above, the volunteers were not afraid of the ERP as such, due to their technical orientation [N° 17], mastery of information systems [N° 14], and familiarity with the underperforming ERP [N° 15]. Also, it must be noted that in industrial production sites, the transmission of coded data is a relatively routine matter. Generally speaking, the problems they experienced with the

TABLE 2
Potentially Salient Characteristics of the Members of the Informal "Competency Center"

N°	Pertinent characteristics of members of the emerging Competency Center N = 14	Categories	1 Production Scheduler	1 Operations Maintenance Technician	1 Industrial Engineer	3 Shopfloor Supervisors	1 Management Controller	1 Unit manager	1 Procurement Officer	1 Computer Specialist	3 Assembly Line Operator	1 Inventory Manager	Dominant values
0	Nationality	A	French	French	French	French	French	French	French	French	French	French	French
1	Status within the hierarchy	A	Super-visory	Super-visory	Mgt	3 Sup	Mgt	Mgt	Super visory	Mgt	3 Oper	Sup	7 Sup
2	Experienced vs. Relatively new to the production unit	A	Rel new	Rel new	Rel New	3 Exp	Rel new	Exp	Exp	Exp	3 Exp	Exp	10 Exp
3	Sex (M / F)	A	F	M	M	3F	M	M	M	M	1 M / 2 F	M	8 M
4	Power distance with management	A	4	3	3	3 (x 3)	2	3	3	3	4 (x 3)	3	3
5	Position in company based on education/Internal promotion	A	Prom	Educ	Educ	3 Prom	Educ	Educ	Prom	Prom	3 Prom	Prom	10 Prom
6	Company loyalty / priority on personal motivations	B	Comp	Comp	Personal motiv	3 Comp	Comp	Personal motiv	Comp	Comp	3 Comp	Comp	12 Comp
7	Open to new ideas / Resistant to new ideas	B	Open	Open	Open	3 Open	Clo'd	Clo'd	Open	Clo'd	3 Open	Open	11 Open
8	Task-oriented / Relationship – oriented	B	Rel	Rel	Rel	3 Task	Task	Task	Rel	Task	3 Task	Rel	9 Task
9	Sense of shared purpose	B	4	4	4	3 (x 3)	4	2	3	3	3 (x 3)	4	3 / 4
10	In-group solidarity	B	4	4	3	3 (x 3)	4	3	3	3	3 (x 3)	4	3 / 4
11	Shared concern for the outcome	B	4	4	3	3 (x 3)	4	3	3	3	3 (x 3)	4	3 / 4
12	Tacit communication Informal information	B	3	2	2	4 (x 3)	1	3	3	3	4 (x 3)	3	3 / 4

N°	Pertinent characteristics of members of the emerging Competency Center N = 14	Categories	1 Production Scheduler	1 Operations Maintenance Technician	1 Industrial Engineer	3 Shopfloor Supervisors	1 Management Controller	1 Unit manager	1 Procurement Officer	1 Computer Specialist	3 Assembly Line Operator	1 Inventory Manager	Dominant values
13	Professional expertise in a specific area	C	2	4	3	4 (x 3)	3	4	4	4	4 (x 3)	2	**4**
14	ERP expertise in general	C	2	4	2	2 (x 3)	4	3	4	4	1 (x 3)	3	**Mixed**
15	Degree of experience with the troubled ERP	C	4	4	3	3 (x 3)	4	3	4	4	2 (x 3)	4	**3 / 4**
16	Frequent use of numbers	C	3	4	4	2 (x 3)	4	4	3	2	2 (x 3)	3	**Mixed**
17	Technical orientation	C	2	4	4	4 (x 3)	4	4	4	4	4 (x 3)	4	**4**
18	Intensity of use of ERP	C	4	4	3	3 (x3)	4	3	4	4	2 (x3)	4	**3 / 4**
19	Expertise in production management and logistics	C	1	4	3	1 (x 3)	3	4	3	3	1 (x 3)	2	**3**
20	Membership is perceived as a status in the organization	D	4	4	3	3 (x 3)	4	3	3	3	3 (x3)	4	**3 / 4**
21	Personal interest in the outcome	D	3	4	4	3 (x 3)	4	4	3	2	3 (x 3)	4	**3 / 4**
22	Commitment to a successful outcome (results orientation)	D	4	4	4	2 (x 3)	4	2	3	2	3 (x 3)	3	**3 / 4**
25	Willingness to work together	D	4	4	3	3 (x 3)	4	2	3	2	3 (x 3)	4	**3 / 4**
24	Results that are achievable	D	3	4	3	2 (x 3)	2	2	3	2	3 (x 3)	3	**3**
25	Awareness of the stakes of the mission	D	4	4	4	3 (x 3)	4	3	3	3	3 (x 3)	4	**3 / 4**
26	Sense of personal responsibility	D	3	4	4	3 (x 3)	4	4	3	2	3 (x3)	4	**3 / 4**

ERP were linked to non-technical issues. In fact, one of the greatest strengths of the CC was the boundary-spanning role it played between technically-oriented end-users and the less-technically oriented ones.

D: Personal drive and determination, [N° 20 - 26]

The determination of the 14-member "task-force" could be seen as a form of resilience in a situation that had become critical. The members of the CC were annoyed with the senior management's disregard for the consequences of the ERP project, and unhappy with the top-down manner in which it had been imposed. Consequently, they were "driven" to do something about the downward spiral, and the arrival of the researcher-intervener made their initiatives possible. In particular, they undertook 19 demanding projects which involved a complete resetting of the parameters of the ERP and the resolution of organizational breakdowns (Saint-Léger, 2004). In time, the rest of the personnel began to see positive results and learned to trust the ERP. The CC group's success even changed the attitude of the management and other skeptical members of staff.

Feedback from the CC participants showed that that they were particularly aware of the stakes for both the company and their own future. The task was greater than any one individual could handle, and collaboration was the only way forward. As one of the members explained, "When each of us faced the ERP alone in our corner, we were helpless to do anything about it." Another member felt that they had begun to realize that although the impact of an ERP on an organization can be destabilizing, it can also bring stability if approached in a cooperative spirit. "We know we have to dig our way out of this vicious circle." Based on comments such as this, we consider that a strong results-based orientation characterized this group.

Analysis of our findings

The four categories which have been explored here suggest that multiple values can contribute to individuals' choices and actions in the context of an ERP project in its post-implementation phase. It would not be possible to cover all the cultural values of a group of people, of course, nor can this case be generalized to all groups of end-users of ERP systems. However, this case does support the more dynamic and plural vision of cultural values espoused by Myers & Tan (2002), Weisinger & Salipante (2000) and Gallivan & Srite (2005), and suggests how it applies to ERP projects in trouble.

A close examination of the profiles described on the chart shows that those who displayed the strongest pro-activity and determination were not necessarily those who held managerial positions. Indeed, neither the initiative for creating a CC nor the leadership role within the CC was assumed by the production unit manager, but by the equipment maintenance technician. A core of highly-motivated employees came together around this person, including the management controller, the inventory manager, the production scheduler, an industrial engineer, and the procurement officer. From that point, the unit manager, and the other members began to take an interest in the group.

The weak involvement of top managers throughout the preparatory phase and rollout made the volunteers aware that without their intervention, the project was doomed. This finding suggests that some end-users need to feel that they can play a useful role in the process before fully embracing ERP implementation. Indeed, the question of the roles played by end-users in ERP implementation is not a secondary one. As in any project involving culturally-diverse groups, boundary spanners, champions, and ambassadors can facilitate understanding between disparate groups, providing vital resources (Cross and Parker, 2004, Levina and Vaast, 2005), but they may also act as gatekeepers, wielding symbolic power over project participants that can prove to be detrimental to the sharing of project goals and full commitment of all project members (Beath, 1991, Bourdieu, 1977). For the same reason, if boundary spanners are pre-selected or officially nominated, there is a danger of their roles being distorted by their "status", resulting in in-group/out-group conflict or lowered motivation on the part of the non-chosen (Sproull et al., 1984). In the case of Ferguson, the open-mindedness and task-orientation of the CC members prevented this distortion from occurring.

One important question we asked at the beginning of our study was "If these characteristics contributed to the successful outcome of the project, why were they not salient during the two years following the initial rollout?" The members of the CC were not sure how to answer that question, but the management's weak involvement in the project before and during rollout was often cited as a problem. When asked what motivated them to eventually take charge of the situation, their response is quite clear: They had reacted out of frustration with the lack of progress with the ERP system, and with the resulting disorder in the management of inventory.

Based on those responses, we suggest that the most plausible explanation for the evolution of their mindset is that the values which were salient before the rollout were probably not the ones at play during the turnaround. Seen through the lens of the multiple cultures perspective, the neglect of human and cultural factors by Ferguson's senior management during the preparatory phase of the project led to the salience of detrimental values such as a lack of company loyalty and a (personal) relationship-orientation rather than a task-orientation. As we have seen, the CC's pride in overcoming obstacles allowed other values to become salient, such as a sense of shared purpose and company loyalty, aided by a technological orientation.

Conclusion

The emergence of the task force of 14 volunteers presented us with a unique opportunity to explore the cultural values of a positive-minded population and the factors that triggered the salience of those values. The overwhelming prevalence of certain values such as an IT orientation, ERP expertise, a keen interest in the outcome of the project, openness to new ideas, pride in being a part of the group, and greater loyalty to the company than to the individual's private interests, would seem to indicate a correlation between the values we observed and the test subjects' participation in the pro-active group.

This case also demonstrates the importance of the manager's role in encouraging values that are needed during the preparatory and post-implementation phase, avoiding those that lead to or reinforce hostility or ambivalence toward the ERP. When the researcher-intervener was given the opportunity to lead the turnaround of the ERP project at Ferguson, the context was ripe for change. As we have seen, the future members of the CC team had become exasperated with the inability of senior management to correct the situation, which provoked them to take action.

The scope of our results is limited to the criteria for which we were able to retrieve qualitative information, but our study does achieve the goal of "personalizing" data to illustrate the effects of multiple sources of values on an individual's behavior. Sackmann and Phillips (2004) warned that the multiple cultures perspective would not lead to neatly refined results, as it is designed to expose the rougher edges of cultural processes.

One of the major contributions to knowledge of the multiple cultures perspective is the acknowledgement of the inherent complexities, contradictions, and paradoxes that the new work and associated cultural realities mean for organizations, work groups, and individuals. As such, conflicting, contradicting, or paradoxical findings are not excluded or fine-tuned in the results section; instead, they are a vital part of the discovery process that are also reported and discussed.

The inherent "messiness" of the multiple cultures perspective is perhaps inevitable, but with more exploration, some of the rougher edges can and should be smoothed out. For example, how do we determine salience in a given context? Do informants have the necessary reflexivity to guide researchers in the right direction? How do certain values held by individuals become "activated" while others lose their pertinence, and are there strategies for influencing salience? What other factors might explain cultural behavior in any given situation? What contribution could organizational or cognitive psychologists make to our understanding of multiple cultures in the workplace, in the field of mental agency, for example?

As global and technological connections continue to intensify, we can be sure that the need to understand cultural processes will also intensify. Our study of the difficulties and eventual success at Ferguson has shown us the complexity of tracking and managing cultural processes, and the multiple cultures perspective reflects that complexity. Future research could focus on the viability of the multiple cultures perspective by gathering more nuanced data, and by testing it in other contexts with a bigger sample. Still other studies could test the interconnection of the concepts of shared identity, boundary spanning, and multiple cultures with a view to proposing a unified framework on the dynamics of values.

Bibliography

Azan, Wilfrid.; Beldi, Adel (2009). "Apport de la théorie de l'action humaine à la compréhension des usages des systèmes d'information", *Systèmes d'Information et Management*, Vol. 14, N° 3, p. 79-107.

Beath, Cynthia M. (1991). "Supporting the Information Technology Champion", *MIS Quarterly,* Vol. 15, N° 3, p. 355-372.

Bourdieu, Pierre (1977). *Outline of a Theory of Practice*, Cambridge, Cambridge University Press, 248 p.

Brannen, Mary Y.; Salk, J., Jane E. (2000). "Partnering across borders: Negotiating organizational culture in a German-Japan joint venture", *Human Relations*, Vol. 53, N° 4, p. 451-487.

Burton-Jones, Andrew; Gallivan, Michael J. (2007). "Toward a deeper understanding of system usage in organizations: a multilevel perspectives", *MIS Quarterly*, Vol. 31, N° 4, p. 657-679.

Cramton, Catherine D.; Hinds, Pamela J. (2005). "Subgroup dynamics in internationally distributed teams: Ethnocentrism or cross-national learning?", *Research in Organizational Behavior,* Vol. 26, p. 231-263.

Creswell, John (1994). *Research Design, Qualitative and Quantitative Approaches*, Thousand Oaks, California, Sage, 228 p.

Cross, Robert L.; Parker, Andrew (2004). *The Hidden Power of Social Networks: Understanding How Work Really Gets Done in Organizations*, Boston, Harvard Business School Press, Boston, 213 p.

Davenport, Thomas H.; Harris, Jeanne G.; Cantrell S. (2004). "Enterprise systems and ongoing process change", *Business Process Management Journal*, Vol. 10, N° 1, p. 16-26.

D'Iribarne, Philippe (2009). "National Cultures and Organisations in Search of a Theory: An Interpretative Approach", *International Journal of Cross Cultural Management*, Vol. 9, N°. 3, p. 309-321.

Gallivan, Michael J.; Srite, Mark (2005). "Information Technology and Culture: Merging Fragmented and Holistic Perspectives of Culture", *Journal of Information & Organization*, Vol.15, N° 2, p. 295-338.

Giddens, Anthony (1984). *The Constitution of Society: Outline of the theory of structuration*, Cambridge, Polity Press, 402 p.

Gwillim, David; Dovery, Ken; Wieder, Bernhard (2005). "The politics of post-implementation reviews", *Information Systems Journal*, Vol. 15, N° 4, p. 307-319.

Hall, Edward T. (1976). *Beyond Culture*, Anchor, Garden City, CA, 298 p.

HANISCH, Josephine; THANASANKIT, Theerasak.; CORBITT, Brian (2001). "Understanding the cultural and social impacts on requirements engineering processes – identifying some problems challenging virtual team interaction with clients", *9th European Conference on Information Systems,* Bled, Slovenia, June 27-29, p.11-22.

HATCH, Mary J. (1993). "The Dynamics of Organizational Culture", *Academy of Management Review*, Vol. l8, N° 4, p. 657-693.

HILL, Carole.; LOCH, Karen.; STRAUB, Detmar W.; EL-SHESHAI, Kamal (1998). "A Qualitative Assessment of Arab Culture and Information Technology Transfer," *Journal of Global Information Management*, Vol. 6, N° 3, p. 29-38.

HINDS, Pamela; MORTENSEN, Mark (2005). "Understanding Conflict in Geographically Distributed Teams: The Moderating Effects of Shared Identity, Shared Context, and Spontaneous Communication", *Organization Science*, Vol. 16, N° 3, p. 290-307, May–June.

HOFSTEDE, Geert (1980). *Culture's consequences: International differences in work-related values,* Beverly Hills, California, Sage.

HOFSTEDE, Geert; HOFSTEDE, GEERT JAN (2005). *Cultures and organizations: software of the mind* (2nd ed.), New York, McGraw-Hill, 436 p.

KRUMBHOLZ, Marina; MAIDEN, Neil (2001). "The Implementation of Enterprise Resource Planning Packages in Different Organizational and National Cultures", *Information Systems*, Vol. 26, p. 185-204.

LEIDNER, Dorothy E.; KAYWORTH, Timothy (2006). "Review: a Review of Culture in Information Systems Research: Toward a Theory of Information Technology Culture Conflict", *MIS Quarterly,* Vol. 30, N° 2, p. 357-399.

LEVINA, Natalia; VAAST, Emmanuelle (2005). "The Emergence of Boundary Spanning Competence in Practice: Implications for Implementation and Use of Information Systems," *MIS Quarterly*, Vol. 29, N° 2, p. 335-363.

MCSWEENEY, Brendan (2009). "Dynamic Diversity: Variety and Variation within Countries", *Organization Studies*, Vol. 30, N° 9, p. 933-957.

MYERS, Michael D.; TAN, Felix B. (2002). "Beyond Models of National Culture in Information Systems Research", *Journal of Global Information Management*, Vol. 10, N° 1, p. 24-32.

SACKMANN, Sonja A.; PHILLIPS, Margaret E. (2004). "Contextual Influences on Culture Research: Shifting Assumptions for New Workplace Realities", *International Journal of Cross Cultural Management*, Vol. 4, **N° 3, p**. 370–390.

SACKMANN, Sonja; PHILLIPS, Margaret E.; KLEINBERG, Jill; & BOYACIGILLER, Nakiye (1997). "Single and multiple cultures in international cross-cultural research: Overview", in *Cultural Complexity in Organizations*, S. Sackmann (ed.), Thousand Oaks, CA, Sage, p. 14-48.

SAINT-LÉGER, Guy; BEELER, Betty (2012). "Emergence d'une culture négociée dans le cadre de projets ERP", *Management & Avenir*, No. 53, p.54-71.

SAINT-LÉGER, Guy (2004*). "*L'après projet ERP: Retour d'expérience sur un changement qui n'a pas eu lieu", *Systèmes d'Information et Management*, Vol. 9, N° 2, p. 77-107. http://revuesim.free.fr

SAINT-LÉGER, Guy; EL AMRANI, Redouane (2011). "Le pari des centres de compétences dans la stabilisation des organisations en phase post-projet ERP", *Systèmes d'Information et Management*, Vol. 16, N° 1, 2011, p. 69-112.

SAMMON, David; ADAM, Frederic (2008). "Justifying an ERP Investment: Critical Success Factors for Transformation Investments", *ICIS 2008 Proceedings,* Paper 60.

SAVALL, Henri (1975). *"Enrichir le Travail Humain"*, Dunod, Paris, 275 p.

SAVALL, Henri (2007). "ISEOR'S Socio-economic method", in *Socio-economic interventions in organizations,* edited by A. Buono, & H. Savall, Charlotte, NC: Information Age Publishing, p. 1-31.

SAVALL, Henri; ZARDET, Véronique (2004). *Recherche en Sciences de Gestion: Approche Qualimétrique, Observer l'Objet Complexe?*, Editions Economica, Collection Recherche en Gestion, 432 p.

SCHEIN, Edgar H. (1985). *Organizational Culture and Leadership*, San Francisco, CA, Jossey-Bass, 429 p.

SHANKS, Graeme; PARR, Anne; HU, Bin; CORBITT, Brian; THANASANKIT, Theerasak; SEDDON, Peter (2000). "Differences in Critical Success Factors in ERP Systems Implementation in Australia and China: A Cultural Analysis", *ECIB 2000 Proceedings*, Paper 53, p. 537-544. http://is2.lse.ac.uk/asp/aspecis/20000073.pdf.

SÖDERBERG, Anne-Marie; HOLDEN, Nigel (2002). "Rethinking Cross Cultural Management in a Globalizing Business World", *International Journal of Cross Cultural Management*, Vol. 2, N°1, p. 103-121.

SOH, Christina; SIA, Siew Kien; YAP, Joanne (2000). "Cultural Fits and Misfits: Is ERP a Universal Solution?", *Proceedings of ACM*, p. 47-51.

SPROULL, Lee; KIESLER, Sara; ZUBROW, David (1984). "Encountering an Alien Culture", *Journal of Social Issues*, Vol. 40, No. 3, p. 31-48.

STRAUSS, Anselm (1978). *Negotiations: Varieties, Processes, Contexts, and Social Order*, San Francisco, CA, Jossey-Bass, 270 p.

STRAUB, Detmar; LOCH, Karen; EVARISTO, Roberto; KARAHANNA, Elena; SRITE, Mark (2002). "Toward a Theory-Based Measurement of Culture," *Journal of Global Information Management,* Vol. 10, N° 1, p. 13-23.

TAJFEL, HENRI; TURNER, JOHN (1979). "An Integrative Theory of Intergroup Conflict", *in* W.G. Austin, S. Worchels (Eds.), *The social psychology of intergroup relations*, Monterrey, California, Brooks/Cole. p. 33–48.

TROMPENAARS, Fons; HAMPDEN-TURNER, Charles (1998). *Riding the Waves of Culture: Understanding Cultural Diversity in Business*, 2nd ed., London, Nicholas Brealey, 274 p.

WALSH, Isabelle; KEFI, Hajer (2008). "The Spinning Top Model, a New Path to Conceptualize Culture and Values: Applications to IS Research", *ICIS 2008 Proceedings,* Paper 192. http://aisel.aisnet.org/icis2008/192.

WALSHAM, Geoff. (2002). "Cross-Cultural Software Production and Use: A Structurational Analysis", *MIS Quarterly,* Vol. 26 N° 4, December, p. 359-380.

Weisinger, Judith; Y.; Salipante, Paul (2000). "Culture knowing as practicing: Extending our conceptions of culture", *Journal of Management Inquiry*, Vol. 9, N° 4, p. 376-390.

Yin, Robert (1994). *Case Study Research: Design and Methods*, Beverly Hills, Sage Publishing, 219 p.