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ORGANIZATIONAL CREATIVITY CLIMATE FACTORS: LESSONS LEARNED FROM THE FRENCH ENERGY MANAGEMENT INDUSTRY

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Abstract

In this paper, we draw on evidence from a case study to explore how to enable organizational creativity within a centralised information system. We argue that, even if the project leaders were seeking to enable organizational creativity using a centralized system they overlooked organizational climate factors. To understand these issues, we used the componential creativity theory to explain the influence of creativity encouragements, resources and management practice) toward organizational creativity. We conclude by suggesting that the case described might be an example of the actions to avoid when an organization wants to enable its creativity within a centralized information system.

Keywords: Organizational creativity, Componential creativity theory, centralized information system.

1. Introduction

In an increasingly complex and competitive environment, organizations are forced to enhance organizational creativity in order to establish or regain competitive edge (Amabile et al. 1996; Carayannis and Gonzalez, 2003; Thompson, 2003; Mainemelis, 2010). Previous studies argued that information systems (IS) could facilitate organizational creativity through novel and more flexible ways of organizing business activities (Byrne, 1993, Mangan & Kelly, 2009). In fact, information systems can help organizational members experiment with technology features, improvise, contribute to the content; and may invent new rules beyond designated limits (Degele, 1997). Thus organizational creativity can be heavily influenced by IS governance whether it has adopted a centralized or a decentralized design approach (Brown, 1997; Amabile, Conti, Coon, Lazenby, & Herron, 1996; Cooper, 2000; Bloomfield & Coombs, 1992). A centralized IS approach creates a sense of power and control through monitoring of outputs and standards through establish codified rules and procedures.

However, as organizational creativity begins with creative ideas, a new IS requires an organizational climate that can foster organizational creativity (Amabile et al. 1996). In fact, organizational climate factors can influence the degrees of freedom associated with organizational design and provide opportunities for organizational structures and functions that were not previously possible (Bansler, Damsgaard, Scheepers, Havn, & Thommesen, 2000; Mangan & Kelly, 2009). Consequently, organizational climate factors (encouragement, resources and management practices) can play an important role in leading to organizational creativity within centralized information IS (Amabile et al., 1996; Amabile, 1988).

This paper aims to understand how to enhance organizational creativity through organizational climate factors within a centralized IS. We rely mainly on one of the most prominent theories of organizational creativity – the componential creativity theory – as it provides organizational climate factors assumed to influence organizational creativity (Amabile, 1988). From this theoretical perspective, we analyze organizational climate factors supposed to enhance organizational creativity through a centralized IS. Specifically, we analyze Schneider Electric's attempt to enable organizational creativity through the implementation and use of a centralized IS. Schneider Electric has implemented an intranet system called "Corporate Intranet" to radically change the organization by eliminating departmental boundaries and work flows. The "Corporate Intranet" initiative has suffered from the lack of supportive organizational climate factors to organizational creativity. Although the top management was supportive of the initiative, not adequate management practices have hampered users' autonomy for experimenting and exploring freely technology's content. This situation contributed to the "Corporate Intranet" initiative failure. because no significant changes that were hoped for were attained. The "Corporate Intranet" initiative has only automated existing manual tasks within existing departmental boundaries and work flows.

In short, the purpose of this paper is to illustrate problems associated with enhancing organizational creativity within a centralized IS. Its analysis and results may help managers understand how to enhance organizational creativity when implementing and using a centralized IS. We examine Schneider Electric's experience to outline the mains reasons that inhibited organizational creativity. The study makes three contributions to the IS literature and practice. First, it focuses on organizational creativity within a centralized IS using the componential creativity theory (Amabile, 1988). Second, it conceptualizes the perspective that organizational climate factors play an important role in enhancing organizational creativity. Third, it uses the Schneider Electric case study to illustrate and challenge the findings of the organizational creativity model literature review.

2. Organizational Creativity Model

Due to its undisputable relevance to individual, groups and organizations, the concept of creativity has been widely discussed over the last decades in a variety of disciplines including psychology, sociology, organizational behavior, and IS (Csikzentmihalyi, 1988; Amabile, 1988; Woodman et al. 1993; Cooper, 2000; Styhre and Sundgren, 2005). While other disciplines have paid a particular attention to the subject, it appears that the IS discipline has paid relatively little attention to issues related to creativity (Seidel et al. 2010). Existing creativity research tracks on IS were based on methods, techniques and tools (e.g., Garfield et al. 2001); requirements and strategies for diffusing them (e.g., Snow and Couger, 1991); and support systems for individuals and groups (Clements, 1994; Mac Crimmon and Wagner, 1994; Massetti 1996). These research tracks imply that there was an urgent need to use or develop a comprehensive creativity model for the IS discipline (Cooper 2000). From an analysis of the main IS journals, Seidel et al. (2010) find the Rhodes 4-P model to be the most used general creativity framework.

The 4-P model is composed of creative *processes*, creative *persons*, creative *products*, and creative *press* or environments. In IS, the studies related to the 4-P model while they acknowledge the relevance and interrelation between the 4-Ps, they concentrate mainly on *creative products* and *creative processes* (Satzinger et al. 1999, Tiwana and McLean, 2005; Massetti, 1996). However, the 4-P model alone is not enough to embody the role of a comprehensive creativity model. In the literature we have found two other creativity models: the interactionist model of organizational creativity (Woodman et al. 1993) and the componential model of organizational creativity (Amabile, 1988). In our research, we have chosen the componential theory of organizational creativity because it focuses on intra-organizational influences, and it proposes organizational climate factors that are assumed to influence organizational creativity (Amabile et al. 1996).

Figure 1 illustrates the componential theory of organizational creativity (Amabile, 1988). It includes the major conceptual categories, specifying the main components of each category and the predicted relationships between each scale and organizational creativity. Measurement scales supposed to be positively related to organizational creativity are referred to as "stimulant scales" and those supposed to be negatively related are referred to as "obstacle scales". Within each category, psychological mechanisms underlying the assumption effect on creative behaviors are briefly described. In Amabile's original model organizational creativity results from (1) Encouragement of creativity including organizational encouragement such as reward and recognition of creativity, supervisory encouragement and work group support (2) Available resources including materials, sufficient budget and time (3) Management practices refers to allowance of freedom or autonomy, and organizational impediments such as rigid, formal management structures or conservatism. To adapt this model for the IS context we include also the availability of training as a resource since it help users to be familiar with the system and to manifest their creative contributions. The following discussions describe the componential theory and provide propositions that are later employed to help understand intranet implementation and use at Schneider Electric.

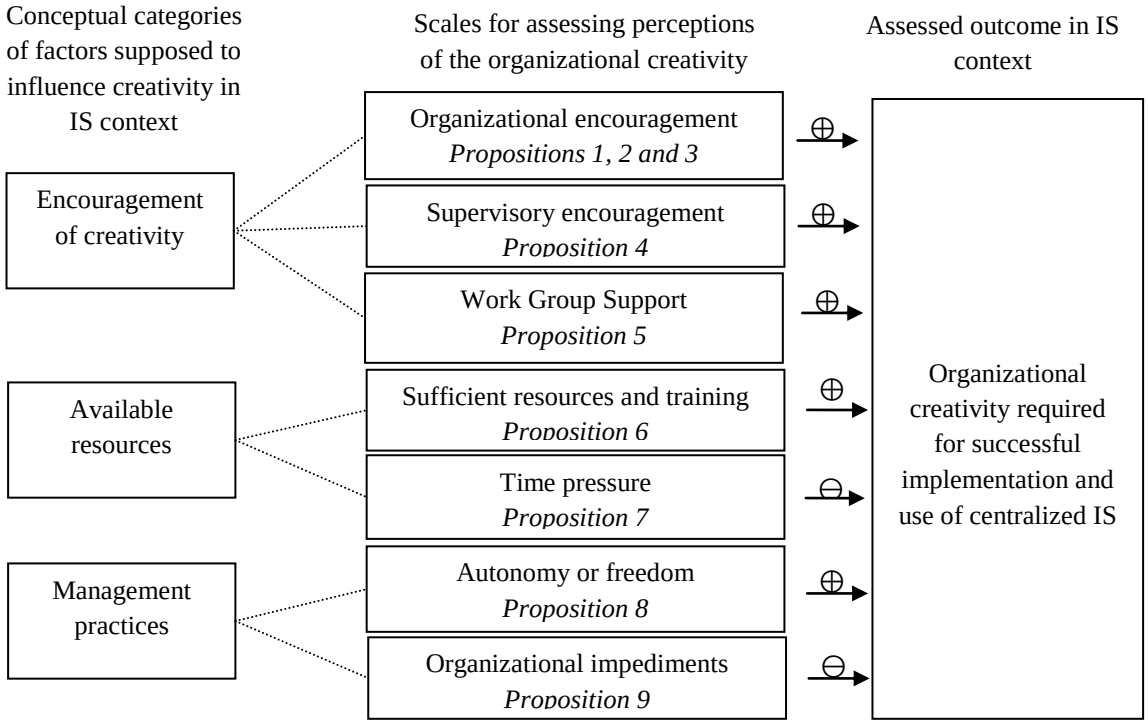

Figure 1. Conceptual Model of componential creativity in IS context (Adapted from Amabile, 1988)

a. Encouragement of risk-taking. Appropriate management support should allow risk-taking whether successful or not (Amabile, 1998), and provide an atmosphere where innovation is prized and failure is not fatal (West, 1990; Amabile, 1998). The lack of risk-taking prevents individuals to share useful ideas (Cooper, 2000), decreases contributions and centralized IS use (Stenmark, 2005). This leads to the following proposition: *(P1) Organizational creativity can be improved by encouraging risk-taking.*

b. Motivation is the second aspect of organizational encouragement. It reflects inner drive and determines what individuals will do (Amabile, 1993). Such motivation affects creativity by affecting the degree of exploration and the likelihood that alternative response possibilities will be examined (Amabile, 1988). Motivation can be intrinsic and/or extrinsic.

b.1 Intrinsic motivation comes from within an individual and results from the interest, enjoyment, satisfaction, and challenge of the activity itself. The intrinsic motivation can be enhanced when a centralized IS is perceived as fun, useful, and easy to use (Elam and Mead, 1987). This leads to the following proposition: (*P2) Organizational creativity can be improved by fostering intrinsic motivation through systems that are perceived by users as fun, useful, and easy to use.*

b.2 Extrinsic motivation can also affect creativity and results from rewards in traditional forms, such as money and advancement (Amabile, 1988). Appropriate reward structures should recognize and reward creative performance (West, 1990). Care should be taken to make sure that organizational members do not feel that every move they make is tied to rewards, as this will tend to reduce their intrinsic motivation to innovate (Amabile, 1993). Creativity can be enhanced with extrinsic motivation if intrinsic motivation is low (Amabile, 1988). The extrinsic motivation can be enhanced when management rewards creative contributions through a centralized IS (Stenmark, 2005). This leads to the following proposition: (*P3) Organizational creativity can be improved by fostering appropriate moderate levels of extrinsic motivation through rewards.*

Supervisory encouragement: The role of managers is determinant to encourage creativity by facilitating open interactions with subordinates (Monge, Cozzens, & Contractor, 1992). Cooper (2000) suggests that the openness of managers can increase local initiatives and creative contributions through a centralized IS. This leads to the following proposition: (*P4) Organizational creativity can be improved by managers' encouragement of local initiatives.*

Work group support: Encouragement of creativity can occur within a work group itself, mutual openness to ideas, constructive challenging of ideas, group's confidence and shared commitment to the project (Monge et al., 1992). A coherent and consistent normative structure facilitates seeking out assistance and collaboration and helps in knowing whom to keep informed. When group members act freely on information presented online, they become recognized and visible within the group, which increases their creative contributions (Dewett, 2003). This leads to the following proposition: (*P5) Organizational creativity can be improved by groups that foster collaboration and trust.*

Available Resources

Sufficient resources: Amabile (1998) stresses explicitly the importance of resources, such as training, materials, and sufficient funds that should be allocated to employees for enhancing organizational creativity. Aside from the obvious practical limitations that extreme resource restrictions place on what organizational members can accomplish in their work, perceptions of the adequacy of resources may affect psychologically by leading to beliefs about the intrinsic value of the activities that they have undertaken. Top management should give enough materials, funds, and training to support the efficient utilization of centralized IS and to improve organizational creativity. This leads to the following proposition: (*P6) Organizational creativity can be improved by providing necessary materials, sufficient funds, and available training to use a centralized IS.*

Time pressure: There is little research directly examining the effects of time pressure on creativity in organizations (Amabile et al., 1996). Some research has found that, although some degree of pressure could have a positive influence if it was perceived as arising from the urgent, intellectually challenging nature of the problem itself (e.g., Andrews & Farris, 1972). Excessive time pressure would be expected to undermine creativity, especially if it were perceived as imposed externally as means of control (Amabile, 1993; Amabile et al., 1996). Stenmark (2005) suggested that excessive time pressure prevents users to share useful ideas and to use a centralized IS. This leads to the following proposition: (*P7) Organizational creativity can be constrained by excessive time pressure.*

Management practices

Autonomy or freedom: Autonomy within processes fosters creativity because it gives people freedom in how they approach their activities, heightens their intrinsic motivation, and increases their sense of challenge (Bailyn, 1985). Creativity is fostered when organizational members have relatively high autonomy in carrying out their activities (Zhou, 1998). In relation with IS use, Wood (1998) suggests that

the use of IS to support monitoring by tracing, supervising, and recording evidence, can create a climate of mistrust hampering local initiatives, and thereby leading to the IS failure. Furthermore, the control of structures throughout restricted access, or password-protected areas, can impeded creative contributions useful to a centralized IS use and success (Cooper, 2000). This leads to the following proposition: *(P8) Organizational creativity can be improved by allowing individuals sufficient autonomy to act freely on information without constraints or restrictions.*

Organizational impediments to creativity: Researches on organizational creativity suggest that internal strife, conservatism, rigid and formal management culture within organizations will impede creativity (e.g., Amabile et al., 1996; Woodman et al., 1993). Because organizational members are likely to perceive each of these factors as controlling, they may lead to reduce their autonomy, and thereby decreasing the intrinsic motivation necessary for creative contributions through a centralized IS (Cooper, 2000). This leads to the following proposition: (*P9) Organizational creativity can be constrained by conservative organizational cultures.*

Using the componential theory of organizational creativity adapted for the IS context as explained above, the case study carried out at Schneider Electric illustrates problems associated with achieving organizational creativity required for the implementation and use of a centralized intranet system.

3. Research method

This section describes the validity and reliability of the case study method employed. Case studies can be employed to develop and to test theory (Yin, 2003). When employing case studies to develop theory, an ethnographic or grounded theoretical position can be taken where non a priori theory is posited (Eisenhardt, 1989). We can also use case studies to test existing theory; a natural science model can be followed by making controlled observations and deductions within cases and by employing multiple cases to enable generalizations (Lee, 1989). Given the substantial research into creativity in IS context and its recognized importance, developing or testing creativity theory is not of interest here. Rather, what is currently missing in IS literature is the insights based on creativity theory that provides a greater understanding of problems associated with achieving organizational creativity through IS (Seidel et al. 2010). Thus, Schneider Electric's case study is proposed as to gain an "in-depth" understanding of the organizational creativity through the centralized intranet system in a "real-life" setting (Stake, 1994). Employing the case in this positivist fashion requires attention to construct validity, reliability, and external validity (Yin, 2003). Note that internal validity is not an issue when employing a case study to illustrate theory (Kirk & Miller, 1986). Construct validity is supported by employing multiple data collection methods (Benbasat, Goldstein, & Mead, 1987; Yin, 2003). The materials reviewed included firm documents, such as annual reports and promotional material (used to obtain background information on the firm's size and business), and internal documents, such as company newsletters, corporate intranet strategy, and intranet project model. We had access to intranet, which enabled us to get experience of its structures, design, and content. In addition, our approach considers the data collected from participants' as their own interpretations of events and processes and are assumed to reasonably reflect an external reality (Kirk & Miller, 1986). A total of Thirty-one (31) semi-structured interviews, lasting approximately one and a half hours each, were conducted with employees and managers from different department of the company. These interviewees were selected for two reasons: (1) they represented all the areas directly impacted by the centralized intranet and (2) they were the most closely involved in the decision making processes that shaped intranet implementation and use. Construct validity was also supported by using multiple sources (Benbasat et al., 1987; Yin, 2003). Based on the notion of triangulation, construct validity is supported if at least two sources (different interviewees and/or documents) are used for identifying propositions. Construct validity was also supported by getting feedback on a draft of this article from a key informant in the company. These informants were responsible of communication and IT

departments, and provided us with helpful comments, and thus confirmed and elaborated the identified issues. As a result, the case discussion is informed via both interviews as well as documents.
Reliability is demonstrated by the appropriate use of case study protocol (Yin, 2003). Data collection at the company primarily took place over a five-month period. The interviews were semi-structured individual questions addressing five main themes as suggested by Cooper (2000): an overview of the employee's roles and responsibilities, a description of the available IS (intranet), key players, organizational factors and how they influence organizational creativity, and finally, what went well and what went wrong with the centralized IS. Each interview was transcribed to a word processor, with its date, time, and codes relating to the conceptual model as well as reflective remarks (Miles & Huberman, 1984). Interviews were coded using items related to the perceptual categories of work environment factors affecting creativity suggested by Amabile, Conti, Coon, Lazenby and Herron (1996), and adapted to the IS context. These notes were then combined with similarly coded notes covering written documentation, and formed a case study database. The analyses presented below are formulated from this database.
The following case study is an interpretation of a single centralized intranet in an organization. Although significant insights can be gained from such interpretation (Yin, 2003), further examination of the creativity model in other IS contexts should be pursued to enhance external validity.

4. Schneider Electric and centralized intranet

Schneider Electric is a leading French global electricity and automation management company. Schneider Electric operates in an intensive competitive environment which threatens to erode its market share and could have a negative impact on its financial performance. In response to these competitive pressures, anticipating clients' needs to maintain a competitive advantage are an important goal for Schneider Electric. A critical success factor in achieving that goal is believed to be innovation in products and information technology-enabled processes, as expressed by its CEO "When we give talented and imaginative teams the opportunity to work together is always fertile (...) the coming years should give priority to innovation and technology at all our specialties."[1]
However, the company combines the need to innovate with caution appropriate for organizational change by eliminating departmental boundaries, and work flows. Therefore, the decision to implement and use a centralized intranet system had substantial management support because it fits well with the company priority. Historically, intranet at Schneider Electric has undergone two major periods: a decentralized intranet as grassroots initiative and a centralized corporate intranet as controlled process.

Period 1: Decentralized intranet as grassroots initiative

As early as 1990, managers in different departments began developing a decentralized intranet consisting of a few internal websites on the corporate network enabling them to collaborate. In departments, managers encouraged their collaborators to "be creative" [Vice president Customer Software and Business] and to manifest their skills for creating websites, web-boards and links useful for collaboration. Thus, openness toward local initiatives had encouraged positive attitudes favorable to the decentralized intranet and its use. It was evident that the intranet initiative had gained many supporters. Employees in different departments were actively taking part in the development of the intranet, as indicated by the rapid growth in the number of websites and web-boards. "The intranet was an absolutely extraordinary success, it was seen by some as a technology that "save our life" [IT Department Director]. The number of websites created was estimated to over 150 sites, without counting the great number of web-boards and applications created. All websites and services belong to information owners who are usually senior managers or department managers. Every information owner of each department ensures that published information is valid and updated. Every information owner supervises web users who are usually collaborators having received special training in web design for setting up and maintaining websites

[1] In « *L'Essentiel 2004* », reference document of Schneider Electric, April 2005, p.2.

updated. Web users have also the responsibility to help users in each department to publish their useful information or to create helpful applications. While departments have as role to maintain their own websites, the development of more advanced services, such as the videoconferences, audio-conferences, and the corporate telephone directory, typically involve the IT department. IT department specializes in solution based on Web technology, hardware, software, installation, training, management of basic infrastructure, and user support. The decentralized intranet was seen as "creative support because we had the freedom to act… We had the motivation to use it" [Contract Manager]. Although, the intranet was perceived as easy to use, "the absence of web search engine made the accessibility to local sites and information difficult, which made interdepartmental collaboration also difficult" [Vice president Customer Software and Business]. To find appropriate information, employees improvised by exploring useful links, and sharing practical ideas through discussion forums. If these practices can lead to lost time, they were seen as "stimulating individual's creativity because they enhance discovery" [Marketing Manager]. A document management system was used to store and distribute formal documents through the intranet as well as a number of simple workflow applications that allowed employees to consult documents and library books. If these tools were being experimental to enable individuals to explore the potential of the technology, they have known a strong frequentation due to their perceived usefulness. To summarize, this first period was characterized by exploratory attitudes towards the technology, a commitment to learn by doing, and openness towards local initiatives. These liberal "free-for-all practices had stimulated creativity, and created a large community of active users" [Method and Fabrication Manager]

Period 2: A centralized corporate intranet as controlled process

The goal is to radically change the traditional organization for enabling the company to react more quickly and efficiently by eliminating departmental boundaries, job descriptions, and work flows. The company strived to rationalize its activities and focus on core trades by reducing costs and investments that have not directly related to these trades. An important part of the transformation was to remove barriers to information sharing, improve communication and collaboration in intra as well as inter-departments. The centralized intranet implementation project was approved by top management who embraced the intranet concept and allocated resources to its development at any early stage; primarily top management saw the centralized intranet as the best way of implementing his new management philosophy. The proposed centralized corporate intranet has the objective to evolve the traditional websites towards a single backbone network providing departments with a single mechanism through which information dissemination, collaboration, creativity and learning can be supported. The project was championed by the vice president of customer software and Business and carried out by the corporate IT department. The top management decided to adopt a "top-down approach emphasizing careful planning and management control" [IT Department Director]. The vice president acted as the organizational intranet sponsor and had the overall responsibility for the centralized intranet initiative with relation to the company strategy. In addition, three new organizational roles, namely Web Coordinator, Web Developer, and Content Provider have been created.

Declaring Centralized Intranet "a failure"

As the vice president wanted to use intranet to help alter departments by enhancing collaboration in intra as well interdepartmental, the decision was taken to implement and use a centralized Intranet system. The implementation was completed in time as expected, and within budget. The new intranet is a centralized system, which directs queries towards the various sources of practical information; the local websites, which belongs to each department put at the disposal of employees a collection of information's, documents, tools, and databases; and the application tools. The application tools are composed of collaborative tools managed by specific software which enable virtual meetings and remote collaboration.

Although there was significant management support and user contribution, the vice president believes this to be his "greatest failure". The main indicator behind this consequence was a decrease in usage of the intranet within the constraints of existing departments. To the vice president, failure lies in Schneider Electric's ability to take advantage of the potential to use a centralized intranet in a creative way in order

to enable organizational change. This disappointment is assumed by many managers. We had the "feeling of reserve with intranet use, because it was regarded by employees as a substitute of their habitual work practices" [IT Department Director], and as "a support for increasing traceability and monitoring" [Human Resource Manager], which make "the system less used" [Manager of Order Processing]. "Intranet is not appropriate for the exchange of useful ideas and best practices; there is a big effort to do in this sense. Our intranet is poor and our practices don't sufficiently promote contributions for improving the content" [Contract Manager]. This resulted in dissatisfaction that no "process changing" occurred [Manager of Order Processing].

Since the centralized intranet was a failure, we next review this case study in terms of the creativity propositions to provide insight into why the centralized intranet which was intended to enable organizational creativity resulted in a simple consultation of internal documents. Therefore, examining the case in light of the propositions can help us understand what aspects of these key ingredients were not in place and how this contributed to a lack of organizational creativity.

Encouragement of creativity

Risk-taking: In order for change to occur, "there is a need to accept the risk-taking and the right to the error" [Human Resources Director]. However, a relative "conservatism predominates at the company preventing users from being creative" [Factory Production Manager]. Therefore, "instead of working together for problem solving, we seek to find who made the mistake or who is the culpable" [Sales Manger Export]. This sent a message that "management was not interested in encouraging local initiatives" [Contract Manager] and leaded to a lot of conservatism on the part of most users who refused to collaborate and to share their ideas through intranet use. Furthermore, this feeling, expressed by the communication officer, is reinforced by the recent policy, which requires that "intranet use be justified in terms of significant costs reducing" [IT Department Director]. Such conservatism and emphasis on strict economic rationale have developed little incentive for users to take risks; thereby reducing the potential for organizational creativity.

Intrinsic Motivation: Intranet staff members found the new technology very interesting and believed that becoming familiar and "helpful in their activities" [IT Department Director]. Although some users were intrigued by intranet, none described it as potentially useful for their activities. Collaborative tools were poor and "very few people used them" [Contract Manager]. In addition these tools "require substantial learning time which was not available" [Human Resource Director]. Therefore, the lack of time prevented users to enjoy the process of learning and to explore use of intranet. Thus, the minimal perceived impact on activities associated with the difficulty in use reduced the effort of employees to use the intranet, thereby reducing the potential for organizational creativity.

Extrinsic motivation: users were "rewarded based on their current jobs" [Human Resource Director], with no obvious incentives for creative contributions. For example, in method and fabrication department certain users known as "innovators" devoted a big time, in addition to their workload, to share their useful ideas through web-boards in order to help the group's members to resolve their technical problems without having their normal workload decreased or receiving financial rewards [Method and Fabrication Manager]. This sent a message that "management was not really interested in organizational creativity", which made collaborative tools less frequented [Factory Production Manager].

Supervisory encouragement: Creativity in practice is driven by a "managerial culture that rewards new ideas, allows risk-taking, authorizes errors, and encourages those who have made new things" [Human Resource Director]. In the company "nothing concrete and explicit was really implemented to encourage the creativity of collaborators" [Contract Manager]. Furthermore, the recent policy which requires "more control of intranet management for rationalizing practices and improving productivity" [Vice president Customer Software and Business], reinforced monitoring practices, and certain managers have even prohibited the use of forums perceived as "unproductive" when they are used in nonprofessional concerns [Contract Manager]. Such conservatism and emphasis on monitoring practices prevented creative contributions, thereby reducing the potential for organizational creativity.

Work group support: Schneider Electric has a history of continuous change: "the company goes through a lot of changes all the time" [Shared Services Center Manager] and "reorganization occurs every 12 to 24 months" [Sales Manager Export]. This resulted in multiple changes in group members hindering the confidence necessary to useful contributions. For example, "a new manager has been appointed to head a sales team; he introduced some changes in team member's practices by using intranet functionalities to trace and to record evidence" [Human Resource Director]. These practices created a mistrust climate reducing team creativity and collaboration. One reason for this was the fear to make mistakes within a mistrust climate characterized by "more monitoring" [Human Resource Director], making useful contributions difficult, thereby reducing the likelihood of organizational creativity.

Available resources

Resources: Material resources and consequent funds have been allocated for successful development of the intranet at Schneider Electric. All users were equipped with PCs, and the IT department had established the technical infrastructure necessary by installing of browsers on all PCs, increasing of the capacity of existing corporate network, and adding more international connections to network. However, intranet staff members believed that "the question of the training is not a main concern anymore since intranet has existed for a long time, and its adoption will be done, either hierarchically, imposed from above, or there will be an adoption through the acknowledgement that the intranet is essential in activities" [Vice president Customer Software and Business]. In addition, the decision process to "force" users to adopt intranet without training decreased the supportive atmosphere, resulting in communications that were "manipulated" [Factory Production Manager], and reducing the likelihood of organizational creativity.

Time pressure: Organizational practices rested on management by objectives, planned and rational; in fact "a lot of time pressure and stress" prevented employees to use collaborative tools for sharing useful ideas [Manager of Procurement Process]. Furthermore, if the electronic mail constitutes the main collaborative tool used, the overload due to the number of messages exchanged increased information overload, and made from it an "impediment" for organizational creativity [Operations Unit Manager].

Management practices

Autonomy or freedom: Practices were based on a rigorous control of management processes which was perceived as "excessive" [Sales Manger Export, Marketing Information Systems Manager]. Users had little autonomy to act freely on information because intranet was managed by a web-coordinator [Marketing Information Systems Manager]. In addition, in certain departments directors preferred controlling information through restricted access, and password-protected areas, which reduced contributions [Contract Manager]. Furthermore, "certain managers used electronic mail for tracing and recording evidence", which prevented collaboration [Shared Services Center Manager], thereby reducing the potential for organizational creativity.

Organizational impediments to creativity: Because of the significant growth of the company, a relative "conservative culture" predominates [Technical Services Manager]. The recent policy requires "more control" [Factory Production Manager], created a negative perception that intranet is implemented to "encourage conservatism and reproduce the same procedures and the same directives" [Human Resource Manager]. This feeling is reinforced by the fact that "creativity comes from upstream" [Operations Unit Manager], which prevented creative downstream contributions, and reduced the likelihood of organizational creativity.

5. Discussion

The important thing is that we try to learn from our failures as well as our successes, and understand that failure will be interpreted by different factors in different ways. It is important to precise that it is not the purpose of this paper to demonstrate that the lack of creativity was the only cause of intranet failure at Schneider Electric. Rather, we have taken in consideration the importance of organizational creativity as

given, and have employed creativity theory to shed light on some of the problems with the centralized intranet. The fact that there are other potential problems (e.g., Markus, 1983; Barley, 1986) does not diminish the need for creativity and the fact that the climate factors at Schneider Electric did not support organizational creativity. In this section, we discuss the climate factors supposed to influence organizational creativity.

Encouragement of creativity

Creativity theory has recognized the critical role of risk taking in the development of local initiatives necessary for technology's success. For example, Stenmark (2005) explained that the lack of risk taking encouragement at Volvo discouraged users to share their useful ideas and leaded to the system's failure. It is suggested that creativity through risk taking is necessary for enabling significant organizational creativity (Tiwana and McLean, 2005). The Schneider Electric case study appears in accordance with these findings. The lack of risk taking in problem solving decreased creativity, thereby decreasing centralized intranet success. The centralized intranet failure was also due to system characteristics. Motivating characteristics include system enjoyability, perceived usefulness and ease of use that are also cited by the literature as affecting intrinsic motivation (e.g., Davis, 1989; Cooper, 2000). The lack of motivating characteristics reduced users' intrinsic motivation for contributions at Schneider Electric, thereby reducing the time and effort they were willing to devote to enjoy the process of learning and to explore intranet use. In addition, extrinsic motivation such as rewards for creative performance was absent, which decreased again intrinsic motivation to share useful ideas (Stenmark, 2005). The centralized intranet was more supported by supervisory encouragement as well as work group support (Ocker et al. 1995). Creativity theory also suggested that tight control by supervisors over the centralized intranet reduced the intrinsic motivation of users to be creative (Ocker et al., 1995; Cooper, 2000; Tiwana and McLean, 2005). The emphasis on monitoring practices at Schneider Electric prevented contributions for problem solving through collaborative tools, thereby decreasing the potential for organizational creativity. In addition, growth and frequent changes as well as mistrust climate in groups at Schneider Electric resulted in uncertainties and non-supportive atmosphere that decreased group members' willingness and ability to contribute.

Available resources

Creativity theory has further recognized the importance of resources that should be allocated to employees for enhancing organizational creativity. Although, consequent funds and material resources have been allocated at Schneider Electric, the lack of training decreased creativity and the chances for the centralized intranet success. Significant training in ensuring the success of IS has been highlighted by many studies. For example, Rivard and Huff (1988) explained that training increases intrinsic motivation to use technology and helps users to manifest creative contributions. Training can expedite the formation of mental models useful for creative performance through three processes (Bostrom et al. 1990). First, via usage; users can acquire a mental model of the system merely through using it. The system interface plays a very important role in this process. Second, via analogy; users can acquire a mental model of a new system by drawing analogy from similar systems that are familiar to them. A user's prior referent experiences play a crucial role in this process. Finally, via training; users can acquire a mental model of the system through training. Learning programs and professional support will influence this process. At Schneider Electric no process seemed to be formed. The first process via usage cannot occur because the multiplicity of interfaces made the system less used. The second process via analogy cannot occur because users were not familiar with technology's content and control practices prevented experimentation useful for learning. Finally, the process via training cannot occur because neither training, nor professional support was done to improve the use of the centralized intranet tools. In addition, the decision process imposing intranet adoption without training decreased the intrinsic motivation to use the technology, thereby decreasing creativity and technology's success (Bostrom et al. 1990). At Schneider Electric, perceived time pressure appeared to be a barrier for learning process necessary in creative performance. Time pressure exacerbated conditions of information overload which lead to the proliferation of

information preventing intranet experimentation and exploration. As result intranet is perceived as "gasworks: complex". In addition, time pressure was perceived as means of control which decreased intrinsic motivation necessary for useful participation. This appears in accordance with certain authors' findings. For example, Paul and Nazareth (2010) found that individuals in pressure time situations often experience overload, primarily due to threat rigidity, which prevented their creative performance. Stenmark (2005) provided others examples of Toshiba and 3M to explain how these organizations allowed their employees to devote 15 percent of their time for exploring useful information, thereby increasing the chances for organizational creativity.

Management practices

The centralized intranet of Schneider Electric as a controlled process, has limited autonomous initiatives. Control practices through restricted access to certain areas decreased intrinsic motivation necessary for experimentation, thereby decreasing the chances for centralized intranet success. This appears in accord with previous authors' findings. For example, Bansler et al. (2000) explained that a high degree of organizational control leaded to a little room for experimentation and learning. As a result the centralized intranet didn't reflect local conditions and the organization missed opportunities to apply and leverage the capabilities of the technology. Curry and Stancich (2000) explained that the extent of control given to IT departments hampered creative contributions. Decisions relating to the content and structures made by technical staff ensured to a lack of business focus, and as a result, intranet didn't reflect sufficiently users' needs leading to failure. Authors suggested that allowing relative autonomy for experimentation and learning will lead to organizational creativity, new work practices, and creative ways of using the technology. In addition, the mode of intranet use at Schneider Electric reduced users' autonomy because the usability and visibility of information has been used as an additional control creating a climate of mistrust hampering autonomous initiatives. As Zuboff (1984) pointed out, the "informing" capacity of information systems contains a threat to traditional sources of managerial authority. Facing this threat, managers struggled to retain their position in the hierarchy. They then opposed creative ways of using the IS and used it to reproduce the legitimacy of their managerial authority, which impeded collaboration. The conservative culture that predominated at Schneider Electric prevented exploratory attitudes towards the intranet and leaded to its failure. As explained by Cooper (2000) "management control over the conservative reward structures are interpreted as inhibiting creativity by reducing user motivation to let go of the current system and reducing the likelihood of identifying anything but superficial organizational change".

6. Conclusion

This research has examined how to foster organizational creativity for successful implementation and use of a centralized IS. Questions concerning the ability to implement and use an IS to enable change, has been raised elsewhere in terms of the constraining effects of politics (e.g., Markus, 1983), culture (e.g., Cooper, 1994), as well as other social issues (e.g., Barley, 1986). However, even if political, cultural and other social issues are overcome, successful implementation and use of a centralized IS that enable significant organizational change can only result with organizational creativity (Cooper, 2000). Interestingly, without creativity, IS might enable only superficial change contrary to the will of management. Given this key role, the purpose of this article is to help understand aspects of organizational climate factors supposed to enhance organizational creativity that is necessary. Based on the componential creativity theory, we identified organizational factors that can favor the organizational creativity. In addition, through a Schneider Electric case study, we illustrated problems associated with developing and maintaining these factors. Managing organizational creativity is a complex process, requiring a good grasp of organizational factors that can affect creativity. The model and insights described in this article can help managers and researchers identify important variables and relationships around organizational creativity. This model and future associated research can, therefore, help researchers and managers: (1) determine to

what degree organizational creativity is feasible in a given centralised intranet context and (2) plan and execute organizational factors to enable organizational creativity. We end this article by (1) pointing out some complexities related to the creativity model that were not made explicit earlier, (2) describing how previous IS creativity research areas can make important contributions to the organizational creativity theory. Although creativity is not natural to organizations, the creativity model suggests that it can be fostered by manipulating a variety of organizational factors. The model also proposes that relationships are not necessary linear. For example, increasing extrinsic motivation via rewards can increase creativity to a point, after which it can decrease creativity. In addition, when organizational structures become too tight through tight control over process, it can reduce intrinsic motivation, thereby decreasing creativity. Although there is a long history of research into individual and group creativity, research at the organizational level is a relatively increasingly popular domain (Seidel et al., 2010). As demonstrated by our case study, these literatures can be important sources of insight for research into organizational creativity. As with any scientific research, the propositions from creativity theory are far from complete. This is especially true for organizational level propositions, which are relatively new. Therefore, the assumptions that current creativity theory, with little modification, could be applied to and provide insight for the organizational creativity should be explored in future research activities. In this regard, it will be important to provide a more direct operationalization of creativity, in which the non-creativity effects of political and cultural factors can be identified and controlled.

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