

2008

Strategies for Interweaving Groupware and Organizational Structure

Marius Janson

University of Missouri-St. Louis, janson@umsl.edu

Ann Brown

Cass Business School, a.p.brown@city.ac.uk

Dubravka Cecez-Kecmanovic

School of Information Systems, Technology and Management Sydney, dubravka@unsw.edu.au

Follow this and additional works at: <http://aisel.aisnet.org/ecis2008>

Recommended Citation

Janson, Marius; Brown, Ann; and Cecez-Kecmanovic, Dubravka, "Strategies for Interweaving Groupware and Organizational Structure" (2008). *ECIS 2008 Proceedings*. 85.

<http://aisel.aisnet.org/ecis2008/85>

This material is brought to you by the European Conference on Information Systems (ECIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ECIS 2008 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

INTERWEAVING GROUPWARE IMPLEMENTATION AND ORGANIZATION CULTURE*

Marius Janson, University of Missouri at St. Louis, St. Louis, USA, janson@umsl.edu

Ann Brown, Cass Business School, London, UK, a.p.brown@city.ac.uk

Dubravka Cecez-Kecmanovic, University of New South Wales, Sydney, Australia

dubravka@unsw.edu.au

Abstract

Many authors contend that realizing benefits of new information technologies requires adjusting such technologies to fit with the organization's context or, alternatively, they suggest adjusting organizational practices to accord with the new technologies (Rifkin, 1995). However, Orlikowski and Yates (2006) pointed out that the ways these prescriptions are applied in practice are yet ill defined. Our research yields practice-based suggestions for developing groupware, organizational processes, procedures, and organizational culture needed for successful implementation of information technology.

Keywords: Groupware Design, Groupware Implementation, and Groupware Use.

**This research was supported by the Center for International Studies, UM-St. Louis, Saint Louis, Missouri, USA*

Introduction

Johnson-Lenz (1991) defines Groupware as “a whole system of intentional group processes plus software to support them.” This definition emphasizes that Groupware cannot be divorced from the individuals it supports or from the organizational context within which it is used. Groupware capabilities include email, electronic conferencing, discussion forums, document handling to support collaborative writing, workflow utilities and other facilities that enable customization of databases and help coordinate other groupware and desktop products.

A study of Lotus Notes, however, demonstrates that obtaining business benefit can be elusive (Aldenberg et al, 1999; Orlikowski, 1996; Orlikowski and Yates, 2006). Jones (2005) attributes these negative findings to lack of top executive support, the proliferation of incompatible collaborative tools, installation of inadequate tools, end-user confusion, and existing work practices that are designed around individual rather than collaborative work (Olson and Olson, 2000; Orlikowski, 1996; Orlikowski and Yates, 2006). Because Groupware is a collaborative tool its successful implementation relies on groups wanting to share their work, collaborate and cooperate. Organizations with cultures that reward individual performance and pay insufficient attention to the cooperative effort will fail to benefit from Groupware, because employees will have no incentive to use the tool. Similarly, Orlikowski (1996) describes in great detail how an organization that was initially ill prepared to adopt Lotus Notes, eventually changed organizational processes that in turn resulted in the company’s reaping the benefits from Lotus Notes. Other researchers conclude that redesigned organizational structures combined with unintended Groupware uses lead to changed power relationships between users (Aldenberg et al., 1999; Grudin, 2006). Thus, as prior research demonstrates, realizing Groupware’s potential benefits requires extensive changes in organizational processes, personal and interpersonal orientations, and attention to information technology.

Case studies demonstrate the critical importance of the individual employee’s role in the effective exploitation of groupware (Aldenberg et al, 1999; Jones, 2005; Orlikowski, 1996). Thus, Jones (2005) states “The key to successful enterprise collaboration strategy is to start by looking at employee roles and responsibilities rather than technology.” Orlikowski’s (1996) analysis of the Alpha Company demonstrates that successful Groupware implementation requires organizations to move away from a competitive culture where the individual is rewarded for his/her efforts to a reward system that stresses group results. Furthermore, Orlikowski’s (1996) case study shows the need for employee training. However, because the Alpha Company ’s revenues depended on employee billable hours, staff members were expected to learn the new tool on their personal time, which they refused to do.

Based on a Lotus Notes case study Aldenberg et al. (1999) noted that Groupware required employees to accept more responsibility because they have access to more information. That is to say because team members have broad access to more information they have the responsibility to select the information needed, and to initiate contacts for further needed information which leads to empowered employees who are then expected to do more for themselves. Furthermore, using Lotus Notes to organize meetings results to information capture in the form of meeting minutes, decisions and so on and so forth for access by all relevant staff. This information forms the basis for analysis and review of decisions long after the particular issues discussed have been acted on.

Researchers also uncovered problems inherent in asking for employees to share knowledge (Orlikowski, 2002; Wasko and Faraj, 2005). Employees resist sharing with the rest of the organization because of a culture of personal rewards and a perception that their position depends on their personal expertise. Unequal distribution of the effort required to share information is yet one more impediment to sharing

information. That is to say, individuals who benefit least from sharing information face the task of making it available to other organizational members (Rogers, 1994).

The discussion above shows that successfully implementing and operating Groupware in organizations is affected by many factors. We wish to contribute to the discussion by analyzing the successful design, implementation, and use of Groupware by the Colruyt Company, a large Belgian food discount retailer with annual revenues of US \$6.8 billion. Since its founding in 1965 the Company developed an organizational culture that emphasized devolution of power, decision making, and acceptance of responsibility by staff at all managerial levels. One of the most important aspects of the Company's organizational culture is a stress on interpersonal communication which is essential to enabling collaborative work processes. During the mid 1970s the company designed, developed, installed, and commenced using an interactive system for information dissemination (ISID). In response to further development of the Company's culture and information technology, ISID was enriched by 2006 to a full-featured Groupware system that is now essential to the Company's daily operation and future expansion. Our research at the Colruyt Company uncovered that the company was able to respond in a positive manner to many of difficulties experienced by other organizations when introducing and employing Groupware (Aldenberg et al., 1999; Jones, 2005; Orlikowski, 1996, 2002).

Research Method

Our research into the use of Groupware at the Colruyt Company is case-based. From 1993 until 2006 we conducted thirty-one interviews with twenty-two Company employees. The interviewees included top-level and middle-level managers, operational personnel, and Union officials and Union stewards (Table 1). The interviews, on average 1½ hours in length, were conducted in Flemish, tape-recorded and transcribed for later analysis.

During the interviews we took extensive notes of the interviewees' disposition, his or her office environment, and our impressions with respect to the interview. We conducted preliminary analysis immediately after completing each interview which proved to be very helpful during later analysis of the interviews (Patton, 2001). Then, at a later time, the interviews were transcribed to text in their entirety. Moreover, as an additional effort to ensure accuracy, that is to say, descriptive validity, we returned the transcribed interviews to our informants for inspection and, when necessary, their correction.

Data analysis started while we collected historical documents and conducted the first set of interviews. While studying interview transcripts, annual reports and other internal Company documents, we strove to comprehend how actors perceived and affected changes in their environment. Our understanding of the subjects' interpretations was based on and validated against the historical background of the broader social, economic, and political conditions. Interpreting and understanding human action is essential to our project, and therefore an interpretive research method suited our purpose best. On account of the iterative nature of interpretive research, we went through several hermeneutic circles before arriving at a satisfactory understanding (Klein and Myers, 1999).

Interviewee	1993	2000	2001	2003	2006
Director Distribution				X	
Director Marketing	X		X	X	
Former Chief Executive Officer	X			X	
Former Chief Information Officer	X	X			
Former Director Distribution	X			X	
Former Director Marketing	X	X			
Manager Logistics					X
Manager Marketing				X	
Manager Outsourcing					X
Manager System Design			X	X	X
Manager Systems Application					X
Manager Technical Services			X		X
Moderator – Human Relations					X
Present Chief Executive Officer				X	
Present Chief Information Officer				X	X
Store Clerk	X				
Store Manager	X				
Systems Developer-1					X
Systems Developer-2					X
Union Official at Union Headquarters				X	
Union Steward-1			X		
Union Steward-2			X		

Table 1. Interviewees and Interview Schedule

The Colruyt Company

The Colruyt Company was founded in 1965 as a single food discount store - a revolutionary concept in Belgium at the time. Today the Company operates some 200 stores in Belgium and 44 stores in France and has annual turnover of US \$6.8 billion (2007 Company Annual Report). The company's success is noteworthy considering Belgium's business conditions – wide-ranging governmental regulations, an industry domination by large well-established food retailers, paper-thin profit margins, stringent ecological laws, and the presence of not only one but three combative Unions.

Mr. Jo Colruyt, the company's founder and until his death in 1994 its CEO, had clear philosophical views on the type of company he intended to create. His views shaped the company's structure at inception, and determined many of the company's more unusual characteristics. Mr. Jo Colruyt resolved to compete on price:

- “The business strategy was +10%, -10%, and +1%. It meant we pay employees 10% above average industry wages, we charge customers 10% below our competitors, and we realize a 1% return on sales.” (Former Chief Information Officer, 1993, 2000)

The Company has been remarkably successful in reaching these goals and, in the case of its salary structure employees are paid 10% in excess of average industry pay rates. (Verlinden, 2006).

On founding his Company in 1965 Mr. Colruyt resolved that informatization was crucial to ensuring business success:

- “We organized our first discount store around a revolutionary concept: the immediate integration of the computer [into the entire food distribution chain]. Today, this definitive choice of using informatization in food distribution appears to have been an excellent decision. [Because] of informatization we are more efficient than our competitors. We are convinced that we have a seven year jump on the competition. (Mr. Jo Colruyt, pp. 11-21, 9/26/1983)

In 1965 Belgium the Company’s informatization of food retailing meant that store customers placed food items along with accompanying IBM punch cards in a shopping cart. Store clerks at the checkout register deposited the punch cards in a card reader attached to an IBM tabulator which produced a billing statement for the customer’s approval. Later in the 1960s the card reader which was attached to an IBM tabulator was replaced by an in-store minicomputer. Using this point-of-sales data reordering supplies from food producers and restocking stores were automated. When in 1987 the Company replaced punch card readers by scanners the switch was uncomplicated because, unlike its competitors, the Colruyt Company could leave existing information systems unchanged.

The Colruyt Company’s philosophy with respect to its price guarantee is summarized as “When we promise the lowest price, we are ethically bound to deliver on this promise.” A computer software application package keeps track of the Colruyt Company’s pricing levels and that of its competitors on a product-by-product basis. A team of Colruyt employees check prices in stores throughout Belgium on a daily basis. These prices, some 44,000 each day, are entered into the Company’s central computer for further action. If a competitor sells any food item at a price lower than that charged by the Colruyt Company, the price in Colruyt stores is adjusted downward (2007 Company Annual Report). Since its inception in 1965 the Colruyt Company has been remarkably successful in beating competing food retailers on price while maintaining profitability. A June 2006 price comparison study by an independent agency found that the Colruyt and Makro Companies were less expensive than any of its Belgium-based competitors (de Ruyter, June 29, 2006)

Internet-based sales started on a restricted basis in 1998 (Director Distribution, 2003). Online sales, which were started in 1998, provides customers access to an online portal featuring seven webstores that sell food for home delivery or for in-store pickup, organic food products, nonfood products such as small house appliances, and baby items (www.colruyt.be). The Colruyt Company online sales grew 25% during 2007 compared to 2006 sales figures (2007 Annual Report).

The Colruyt Company invests heavily in advanced technologies including innovations for data recording, data mining, automated warehouse systems, automated truck routing systems, logistical systems, and Internet-based bidding and contracting system that is accessible to pre-approved food producing companies.

The Colruyt Culture

Mr. Jo Colruyt’s vision accords with participative ideals that informed corporate culture and norms since the company’s origination in 1965. He stated:

- “We try to develop the company ... work methods and jobs ... avoid alienation ... it enters because of counter productive conditions under which we are forced to work and by counter productive organizational forms that subject [people] to oppressing power conditions. Caused also by the absurd manner by which organizations reduce workers to mere robots rather than considering their human characteristics, energy, and emotions.” (Jo Colruyt, April 1984, pp. 53-56)

The Company seeks to reduce power asymmetry inherent in hierarchical structures by using temporary work teams where membership is self-selected and anyone with an interest and a need to know can join.

Much effort is expended toward rational decision making that occurs after extensive discussion in work groups and which are widely reported.

Since the Company's inception owner and upper management strove toward rational discourse, reducing power differences between company management and employees, and fostering personal initiative toward action at all corporate levels. Striving toward rationality does not preclude attention to emotional consideration. Stated Mr. Jo Colruyt:

- “Rationality by itself does not work the more computers [one] introduces the more one has to pay attention to [human] communication and human relations. [In absence of all this] people will come to behave like computers and that leads to a society that has no place any longer for humans.” (Jo Colruyt, Interview, 1993)

Decision making and rational discourse requires communicative ability which resulted in investment in employee education and on-the-job training that is unique in Belgium's retailing industry. During 2006, for example, the Company allocated US \$300 million (3.3% of its annual wage costs) to train 16,000 employees in corporate and interpersonal communication in the Flemish and French languages, group dynamics, intercultural differences, and information technology (2006 Company Annual Report).

A concern for emancipation of and participation and decision making by employees throughout the company characterizes corporate culture since the Company's founding in 1965. During the late 1960s behaviorism dominated organizational development thinking. The Company's upper managerial team participated in sensitivity training in the expectation that it would make for better interpersonal understanding and communication, and improved decision making. Top management soon recognized that realizing the benefits of such training required participation of employees at all levels of the Company. Stated the former Chief Information Officer:

- “Groups composed of individual drawn from all managerial levels – e.g., Mr. Jo Colruyt and an inventory clerk – participated in sensitivity training. It resulted in a complete restructuring of corporate culture and relations between management and workers. We started to discuss the issues which evolved into collaborative decision making. Then came the realization that what got discussed during meetings needed to be permanently recorded - you instantly grasp the need for communication” (Former CIO interview, 2000)

According to the former CIO employees at any managerial levels may be impacted by decisions taken during meetings. Therefore, decisions needed to be permanently retained and made available to those affected. These considerations, which took place in the late 1970s, were the rationale for developing and implementing a rudimentary computer-based system that stored and distributed documents. The system became known as the interactive system for information distribution (ISID) and was the start of a long series of developments that by the mid 1980s had evolved into a full-fledged Groupware package (Figure 1).

ISID's capabilities during the late 1970s were necessarily limited, that is to say, the system's essential abilities were retention of and access to documents, notes, and letters. ISID was entirely mainframe-based and used the VSAM database application software for document storage. Because ISID is crucial to organizational norms, culture, day-to-day operation, and business success, it was consistently improved by adding new functions. During the first decade of the new millennium ISID was extended by an email capability that became known as “fast interactive system for information dissemination” (FISID). In the interest of efficiency FISID runs side-by-side to ISID so that users can read email unencumbered by having to scan documents. Finally, after having been completely redesigned in 2006 ISID is a company-wide Groupware and among its services is a document management system in the form of letters, transcriptions, meeting reports, and calendaring.

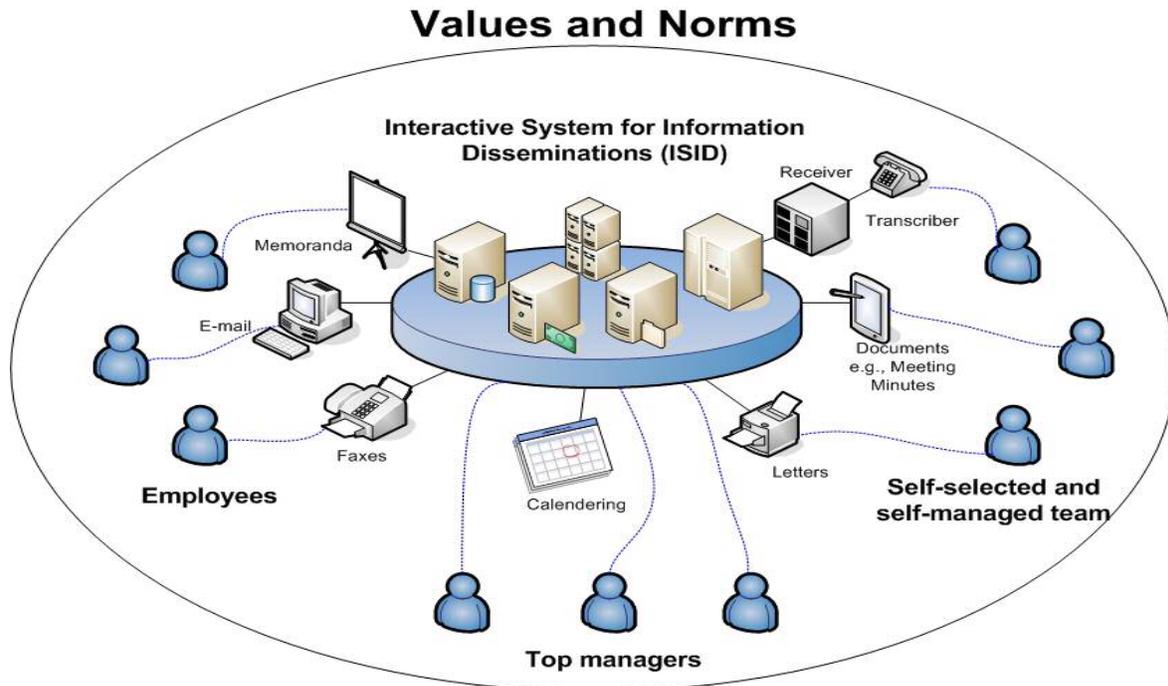


Figure 1. *Interactive System for Information Dissemination*

To illustrate ISID importance to the Company's functioning we relate an actual instance of its use. In 2006 one of the authors attended a two hour long ISID development meeting during which new ISID features were discussed. Because Belgium is a multilingual country, retaining documents in different languages became an important topic of discussion. This implies that a document written in Flemish should be made available in French and English. However, because translating takes time and the number of translators is limited not all documents will be made available in two or three languages. The meeting ended with, among other results, rules to prioritize document translation. These rules were available on ISID later during the same day.

Discussion

Company norms and culture reflect interpersonal openness and understanding, empowerment, and collaborative decision making. This in turn necessitated information sharing between employees at all managerial levels. During its search for a practical information sharing method the Company in the late 1970s settled on developing ISID, a software application that even at the time of its implementation had many of the features of 'Groupware.' During the ensuing years ISID was subject to further development and presently is a full-featured Groupware software package that led to a further strengthening of Company culture and norms. In short, corporate cultural values and Groupware features were and still are mutually enforcing.

Similar to effects noted by Orlikowski (1996), ISID impacted the nature of work and social relations within the Company. For example, unlike the top-level managerial staff members employees at lower managerial levels are not expected to speak both Flemish and French languages. Therefore reports of

meetings have to be made available in each of these two languages. The important issue with respect to information flow within the Company is the language in which a report is first published. This may appear a minor issue but group of employees who receive information first generally have an edge over employees who receive information later. Furthermore, because speaking Flemish or French reflects strongly held emotions the language in which meeting reports are published first has important cultural and social implications.

Rogers (1994) contends that achieving collaboration between individuals requires modifying working practices and customizing Groupware so as to agree with corporate norms. Rogers (1994) further states that this process of co-evolution is complex, likely to run into many obstacles and may even overwhelm an organization. Our analysis of ISID's construction and implementation demonstrates that the Colruyt Company's needs were in effect the driving force behind ISID. To illustrate, during an ISID planning meeting attended by one of the three authors an IT design manager defined the responsibilities of his design group as follows:

- "I am responsible for the ISID [design] group's planning such that the [Colruyt] organization obtains in a timely manner [collaborative and communicative] services that are optimal in terms of performance, quality, and cost. In [close] collaboration with [ISID] users I have a responsibility for constructing a vision for ISID that optimizes its potential while keeping in mind technological limitations." (IT design manager, May 2006)

According to Grudin (2003) top-level managers were always crucial to selecting and obtaining software packages but hardly ever did they operate or interact with the software. Grudin (2003) further remarks that managers were frequently technologically ill prepared to use computer software applications. Finally, Grudin (2003) claims that top-level managers would insist that software support their information needs. Our analysis demonstrates that individuals at all managerial levels as well as operational personnel at the Colruyt Company are active and daily Groupware users who also engage in asking the IT department to extend ISID's features when felt necessary by work processes.

Palen and Grudin (2002) question whether Groupware can be successful if its use is discretionary. These authors argue that collaboration technology adoption is compromised by having to be attractive to all corporate members without receiving long-term top-down support. They further claim that in the case of Groupware wide-spread availability is a necessary but not sufficient condition for successful adoption. In the case of the Colruyt Company's Groupware ISID was designed in response to and in support of existing and developing corporate practices. Moreover, even though a mandate for ISID's use is lacking no Colruyt Company employee can successfully participate if not for the use of this Groupware. Thus the Colruyt Company avoided the problems cited by Palen and Grudin (2002) by implementing a Groupware that responded effectively to wide-spread processing needs.

Bos et al., (2002) contend that worker collaboration greatly depends on mutual trust. These authors further state that mutual trust in turn depends on the mode of communication among the participants. Based on their research the authors conclude face-to-face communication results in a high degree of trust whereas textual communication results in a low degree of trust. Our investigation of the Colruyt Company's Groupware reveals that mutual trust is created during face-to-face communication during meetings after which it is reinforced by storing meeting minutes in ISID. In addition, meeting reports are accessible to Colruyt Company employees who did not or could not attend the meeting. Moreover, as explained earlier, the Company has an extensive set of seminars that are attended by groups of employees composed of a cross section of employees. In short, a combination of face-to-face instruction in communication, face-to-face meetings, and ISID combine to create mutual trust among Colruyt Company employees.

Ensuring proper ISID etiquette became essential as the frequency of use and the number of users at all managerial levels increased. One particular instance calling for managerial intervention arose as a result of

a document that was translated from Flemish into French. Because translating documents from French into Flemish and vice versa is a common occurrence the Colruyt Company employs a considerable number of professional translators. Managerial intervention occurred when the translator of a document translated from Flemish into French received withering critique from someone who actually had no immediate or work-related interest in the document. The complaining individual wrote an extremely hostile message which was emailed to forty-eight individuals at the highest managerial levels mentioning the translator by name but omitting him/her from the email message. A highly placed manager responded with his own personal email stating:

- “Each mode of communication has its strengths and weaknesses. ISID documents ... have important limitations that require the writer to stick exactly to facts ... expressions expressing emotional states [have no place] in ISID messages and certainly not when the document has many recipients.” (Former Director Marketing, 1993, 2000)

A second case requiring managerial intervention involved the use of ISID by Union Stewards by the Colruyt Company and who enjoy access to ISID on par with any other employee. During 1984 two Union Stewards retrieved from ISID letters written by Mr. Jo Colruyt, founder and until 1994 CEO, which they subsequently passed on to the press. This act damaged the Company's reputation which in turn caused decreased sales (Jo Colruyt, July 1984). Rather than limiting ISID access to Union Stewards, the Company's CEO elected to discuss this breach of trust with employees (Jo Colruyt, July 1984). These two incidents exemplify a long series of instances where using ISID requires continued policy-making attention and instruction into its proper and legitimate use. It is notable that top management seeks to strike a delicate balance between restricting access to ISID because of misuse and keeping ISID accessible to all employees so as to ensuring optimal ISID use so as to benefit the Company. Openness of ISID access is the favored response.

Active and ongoing interest and involvement by individuals throughout the organization are indispensable for the Colruyt Company's Groupware continued development and usefulness to corporate goals. ISID was not developed and forced on unwilling or unprepared Company employees. Instead, ISID was developed in response to an already existing organizational culture that emphasized Company-wide collaboration and communication. ISID's initially rudimentary capabilities which over a thirty-year period continue to be enlarged supporting in response to changing work practices and technological advances.

Our research identified several measures essential to the acceptance and successful use of the firm's in-house developed Groupware. Thus, during the late 1970s, some thirty years before ISID's current version, the Colruyt Company created a Groupware in response to its organizational culture and work processes and that was which is characterized by:

- **Informatization:** The Colruyt Company was organized around IT-enabled customer services and work processes. Specifically, since its inception in 1965 all activities surrounding the sales process were supported by IBM punch card operations in the store and a mainframe in headquarters.
- **Communication:** Starting in the mid 1970s the Colruyt Company experimented with an IT-enabled communication system that was a forerunner of ISID.
- **Education:** Based on their discretion employees can attend Company sponsored seminars on communication, conducting meetings, conflict resolution, working in teams, decision making, assertiveness training, self-realization, and many other topics. However, employees are required to attend seminars that teach topics directly related to individuals job.
- **Collaboration and team working:** Embracing business and/or technological opportunities, and problem solving are accomplished by working groups and based on teamwork.

- Bottom-up initiation of informatization projects: Projects are user-generated. Information analysts are assigned to individual business units and form a bridge between the business and the Company's Information Services Department.
- Business aware IT staff: Many employees in the IT department started in the Company's retailing division and are therefore knowledgeable as to how IT serves business interests.
- Job rotation: The Company practices extensive job rotation at all managerial levels. Thus, many employees have in-depth knowledge about their present assignment as well as a first-hand familiarity with other parts of the Company.
- Company wide use of groupware: ISID is widely used to educate and to keep all employees informed about many organizational rules and procedures. Especially when managers observe issues or problem solving methods of Company-wide interest they compose announcements that are emailed to a wide audience via ISID and later retained in ISID's document database.
- Continuous user-led development of information systems: ISID was designed and implemented in response to needs and demands of the user community. Since its inception in the mid 1970s ISID has been enriched with many new features such as email, calendaring, and FISID which stands for fast ISID. Again, these enrichments were in response to user needs.

Our research demonstrates that the Colruyt Company avoided many of the misconceptions, mistakes, and hence the difficulties experienced by other companies with respect to the introduction of Groupware. Items 1 through 9 reveal that the Colruyt Company did not impose Groupware on a reluctant population of workers who resisted changing work practices, and who were loath to learn a system on their own time. These findings support the findings and/or suggestions of other researchers such as Orlikowsky (1996, 2002). However, our findings go beyond corroborating earlier research by delineating organizational processes that bring about conditions leading to Groupware use which improves corporate efficiency, effectiveness, and profitability.

Conclusion

Many case studies analyze and discuss reasons why Groupware is often not used to its full potential. After a close reading of the literature on Groupware we detected few recommendations that would result in the successful implementation of Groupware. In the case of ISID our informants stated that the Groupware is essential to efficiently, effectively, and successfully completing their day-to-day job responsibilities. The Groupware's contribution to organizational functioning did not arise automatically. Rather, it arose from ISID's capabilities as well as from management's role in educating employees in responsible use of the system. In short, our case study demonstrates practical steps essential to overcoming organizational difficulties arising from introducing Groupware systems into organizations.

References

- Aldenberg, B., Heng, M. S. H., and Peters, S. C. A. (October, 1999) "Higher-order effects of Groupware: A Case of Consequences of Lotus Notes," Research Memorandum No. 1999-42, Free University, Faculty of Economics, Business Administration, and Econometrics, The Netherlands, Amsterdam.
- Bos, N., Olson, J., Gergle, D., Olson, G., and Wright, Z. (2002) "Effects of Four Computer-Mediated Communications Channels on Trust Development," Proceedings of the Conference on Human Factors in Computing, April 20-25, 2002, Minneapolis, MN, 135-140.
- Colruyt. Annual Report, 1500 Halle, Belgium: Colruyt, 2006, June 23, 2006.
- Colruyt. Annual Report, 1500 Halle, Belgium: Colruyt, 2007, June 22, 2007.
- Colruyt, Jef. (April, 2007) "Colruyt and Volvo Gent Respect for Diversity on the Shop Floor," (http://www.diversito.be/nl/2007/04/colruyt_en_volvo_gent_respecte.html). (November 28, 2007)
- Colruyt, Jo. (May 1993) Company Founder and Former CEO, Interview with Author, Halle, Belgium.
- Colruyt, Jo. (September 1983) "What is Different at Colruyt?" in There Are No Gentlemen Here Sir, T. Penneman, Belgium, Antwerp: Druco Press, 1985, 11-21.
- Colruyt, Jo. (April 1984) "What is Different at Colruyt?" in There Are No Gentlemen Here Sir, T. Penneman, Belgium, Antwerp: Druco Press, 1985, 53-56.
- De Ruyter, K. (June 26, 2006) "In Belgium One Can Shop Cheaply," (www.nieuwsblad.be/Article/Detail.aspx?articleID=gp7uc70u)
- Grudin, J. (2006) "Evaluation of the Development Process of a CSCW System for Health Care Planning," Proceedings of the 13th European Conference on Information Technology Evaluation, University of Genoa, Italy, September 28-29, 2006, 274-282.
- Johnson-Lenz, P., and Johnson-Lenz, T. (1991) "Computer-Supported Cooperative Work and Groupware," International Journal of Man-Machine Studies, Vol. 34, No. 3, 395-417.
- Jones, P.(ed.), (2005) "Invest In Collaborative Working," The Effective IT Report 2005, London, UK: Infoconomy, 93-94.
- Klein, H., and Myers, M. D. (1999) "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems," Management Information Systems Quarterly, Vol. 23, No. 1, 67-94.
- Orlikowski, W. (1996) "Learning from Lotus Notes: Organizational Issues in Groupware Implementation," in Computerization and Controversy: Value Conflicts and Social Choice, R. Kling (ed.) Orlando, FL: Academic Press, 173-189.
- Orlikowski W. (2002) "Knowing in Practice: Enacting a Collective Capability in Distributed Organizing," Organization Science, Vol. 13, No. 3, 249-273.
- Palen, L., and Grudin, J. (2002) "Discretionary Adoption of Group Support Software: Lessons from Calendar Applications," in Implementing Collaboration Technologies in Industry, B. E. Munkvold (ed.), Springer Verlag, Germany, 159-180.
- Patton, M.Q., (2001) Qualitative Research and Evaluation Methods, Thousand Oaks, CA: Sage Publications.
- Rifkin, G. (1995, June) "A Skeptic's Guide to Groupware," Forbes, 76-91.
- Rogers, Y (1994) "Exploring Obstacles: Integrating CSCW in Evolving Organizations," Proceedings of the 1994 Conference on Computer Supported Collaborative Work, New York, NY: Association for Computing Machinery Press, 67-78.

- Verlinden, T. (2006) "Why Colruyt won't Compete at the Expense of its Employees," (www.datanews.be/nl/news/90-5-14086/kwart-meer-boodschappen-via-internet.html) (November 28, 2007)
- Wasko, M., and Faraj, S. (2005) "Why Should I Share? Examining Social Capital And Knowledge Contribution In Electronic Networks Of Practice," *Management Information Science Quarterly*, Vol. 29, No. 1, 35-57.