



Challenges to ICT implementation in multinationals

Challenges to
ICT

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Abstract

Purpose – The purpose of this paper is to explore the challenges to information and communication technologies (ICT) implementation in multinationals. The paper focuses on contextual variables relevant to the understanding of the implementation of ICT in organizations operating in the Middle East, such as organization culture and power relations.

Design/methodology/approach – The study is based on interviews with 31 employees of a multinational company that operates in the Middle East. In addition, 60 days of electronic mail of two senior managers were studied and random samples of messages from the computers of six participants collected. Altogether 200 e-mail messages, spanning seven months were surveyed.

Findings – It was found that the transplantation of ICT was based on the construction of technology as symbolizing the value of modernity. Although employees did not resist the implementation of ICT tools, several problems related to language and access to data had an impact on their work. Furthermore, the ICT tools implicitly assumed a utilitarian discourse that values computer-mediated more than face-to-face communication, but the organization rejected this aspect of the tools.

Practical implications – We argue that more flexible designs of ICT should take into account the particular discourse system employed in order to achieve a better fit between the ICT tools and the users.

Originality/value – The paper focuses on a neglected area of research, the implementation of ICT tools in culturally diverse organizations and discusses contextual variables relevant to the understanding of the implementation of ICT in organizations such as organization culture and power relations which have not been extensively discussed in the literature.

Keywords Communication technologies, Multinational companies, Egypt

Paper type Research paper

Information and communication technologies (ICT) have an important role in the operations and management of modern organizations. This role is especially important for multinational companies, for which knowledge is an essential organizational resource (Argote and Ingram, 2000; Mudambi, 2002; Grant, 1996). Indeed, ICT often forms the basis for cross-border interaction and cooperation. Yet despite this global reach, many barriers may be created by the design and implementation of information systems in diverse organizations.

Research has shown that the implementation of information systems in organizations requires a focus on contextual variables such as organization power relations and organization culture (Markus and Pfeffer, 1983). However, the implementation of



information systems in diverse organizations such as multinational corporations might also involve the influence of local culture, a topic that has been neglected in the literature.

Our attempt in this paper is to analyze the implementation of information systems in a multinational corporation while considering organization power relation and culture as well as local culture.

Orlikowski and Baroudi (2002) argue that much of information system research reflects a positivistic orientation focusing on rational fit between the attributes of communication media and the communication task requirements. Yet, scholars argue that a wide range of empirical evidence suggests that other factors influence the choice of a medium, including social organizational norms and symbolic meanings attributed to the medium itself (Steinfeld, 1992). Furthermore, research has consistently shown that it is the social and organizational context of information systems design, development, and application which lead to the greatest practical problems (Orlikowski and Baroudi, 2002; Harvey and Myers, 2002).

Studies within the social-interpretive approach examine the way in which technologies insinuate themselves, with a focus on larger organizational contexts mainly the organization power relation and culture (Jackson *et al.*, 2002; Robey and Boudreau, 1999; Silva, 2005; Markus and Pfeffer, 1983).

Other studies within the social interpretive approach shed light on the symbolic aspects of technologies. Orlikowski and Gash (1994) introduce the notion of technological frames as sense makers for IT in organizations. Technological frames are used to indicate the set of assumptions, expectations and knowledge that the members of an organization have regarding technology in their shared context, including technology itself, as well as the effects of technology in a specific situation, place, time, or project. Orlikowski and Gash consider technologies to be social artifacts that have material form and function embodied by the values, priorities and understanding of sponsors, and developers. Other researches note that information itself is symbolic, and technologies may produce positive social meanings, such as modernity, and status, as well as negative meanings, such as restriction of personal freedom (Robey and Boudreau, 1999).

Based on the growing recognition made of the need to temper the quasi-experimental forms of research with those which are more concerned with contextual analysis (Harvey and Myers, 2002) we designed an interpretive field study that focuses on the implementation of new technology in a multinational corporation. Our main research question is thus: How were ICT tools implemented in a Middle Eastern multinational corporation, and what organizational and cultural aspects need to be addressed in implementing ICT tools in a Middle Eastern multinational corporation?

Case study: Begeg Textile Industries Ltd

We conducted our study at Begeg Textile Industries Ltd (Begeg), a multinational Israeli firm with globally dispersed engineering, production, marketing, sales, and administration. Several divisions and the company headquarters are located in Israel, while production is done in the firm's plants in Egypt, Jordan, and Israel. The customers are mostly name brand firms in the United States; another major customer is British.

The Egyptian plant was established in 1996. It is responsible for cutting, sewing and packaging the textile products, mainly underwear. The Egyptian plant has contacts with Egyptian knitting, dyeing and printing factories. It receives supplies

from the Israeli headquarters. The headquarters division we studied has contacts with employees in the Egyptian plant, as well as with the Beged team in London and with representatives of the British customer, who set the product's design and specifications.

The Egyptian plant is highly automated, and all production is computer-integrated. The introduction of ICT tools have started 2.5 years prior to the time of data collection. The main database software, Movex, was installed ten months prior to the time of data collection. There are two senior Israeli managers in charge of the plant and several professionals from the headquarters who visit the plant every other week. The plant is under heavy pressure to meet high quality standards.

Method

We have designed our study as a case study (Benbasat *et al.*, 2002). Our intention is to describe and analyze "the native's point of view" and to discuss the phenomenon under study within specific contexts. Among the contexts that are of relevance to the understanding of the implementation of ICT tools are power relations, the specific organization culture and the local culture.

Interviews

Interview sample. We conducted interviews with 31 employees who hold different professional and managerial positions in the organization. Among them were 16 Israelis, including six managers who work in Egypt and one person who works in Jordan as well as 13 Egyptian employees. We also conducted two interviews with British employees who stay several months a year in Egypt.

Procedure. In-depth semi-structured interviews were conducted individually with each subject of the interview sample (Saunders *et al.*, 2003). We asked two leading questions:

- (1) Can you please describe your job (What do you do? What are your responsibilities?).
- (2) Can you please describe how do you use the computer and its different tools in your daily work? and then continued with follow-up questions, depending on the initial answers the respondents provided.

All interviews were conducted face-to-face.

Documents

We studied 60 days of electronic mail of two senior managers, one in Egypt and one in Israel as well as random samples of messages from the computers of six participants, both Israelis and Egyptians. The purpose of the examination was to get a sense of the e-mail culture in Beged. Altogether we surveyed 200 e-mail messages, spanning seven months.

Observations

The authors visited the organization's subsidiaries in Israel and Egypt several times. During these visits, we acquired knowledge about such essential topics as the use of information systems and the process of communication among employees within a subsidiary and between subsidiaries. We also studied Beged's organizational culture.

Power relations and the transplantation of ICT

ICT was implemented in Begeed as part of client pressures to set new standards for production, quality control systems, planning systems, sewing instructions, etc. The Egyptian plant had been established by a small group of Israeli managers who had relocated from Israel. At first, they used the management and communication style of a domestic Israeli company, where information is not always organized, explicit, clear, and structured, and where managers tend to be spontaneous and ignore the rules (Shamir and Melnik, 2002). Gradually, over the course of two years, the Israeli managers accepted the principles and practices of their customer. Begeed's major UK-based customer set requirements not only for product quality, but also for broader issues such as safety rules and the organization's product files. The client sent supervisors to check the standards of production every three months.

Thus, in response to the client's demand, the Israeli management adopted to some degree new norms of work, which are expressed in the acceptance of rules and procedures and explicitly in the form of a laboratory book of procedures, product files, etc. Although there was some resistance at first, the managers have learned to appreciate this new way of work.

While in previous research there was an emphasis on internal organization power relations and its impact on the implementation of ICT tools (Robey and Boudreau, 1999; Lin and Silva, 2005), we find that external organization forces such as an important customer might have an impact on the implementation and use of ICT tools.

The second stage in the implementation was to introduce the new approach and the new technology to lower level managers and to employees in the plant. These employees were not familiar with ICT:

At the beginning, it took time to explain to people about the computer and its software because they were not familiar with it. They were open to learn the new technology because they wanted to make progress, to know more about computers. They saw that the society outside is progressing, and they were looking for the opportunity (Technical Support person).

Technological progress was not a feature of the general business sector in Egypt at that time: "there are huge technological gaps between the technology in our plant and the technology that people use across the road," stated one manager. Learning ICT was considered an opportunity for Egyptian employees and it took a multinational corporation like Begeed to provide the setting for this training.

Thus, the transplantation of ICT in the Egyptian plant was based on the construction of technology as symbolizing the value of modernity (Robey and Boudreau, 1999). In this context, technology is used as social artifact (Orlikowski and Gash, 1994). The acceptance of ICT is explained not only by the existence of technological gaps between Begeed and its surroundings and the benefit to its Egyptian employees, but also by the transplantation of a specific organizational culture by Begeed's senior leaders.

Senior managers used several mechanisms to justify and promoted the use of new technology. They invested effort to establish a technology-centered culture (Schein, 1990). This culture was promoted in various ways by the plant's managers. As one stated: "our policy is to introduce the best technology. We do not consider the fact that here, in Egypt, one can get cheap labor." He continued: "What I tell the employees over and over again is that we are going to produce the best quality, and we have the best technology."

These aspects of Beige's organization culture were expressed in interviews with the Egyptian plant's administration.

Thus, the focus on technology is part of the organization's creed and culture. Like in other multinational organizations, Beige's managers make efforts to build a common technical culture. It is assumed that technical or procedural mechanisms can overcome cultural differences among Bege'd's diverse population (Hoecklin, 1995).

The premise of technological progress as the basis for the organization's culture is woven together with another idea in the leaders' rhetoric as in the following comments of a senior Israeli manager:

I talk about the national pride of the plant, about national Egyptian pride. It is pride that it is the first plant in Egypt that produces for this specific British customer. We need to keep the tension, to keep up a high level of production. They perceive the plant as an Egyptian plant. I tell them that we produce our goods with the label: Made in Egypt. You want to be perceived as Masri [Egyptian]. It counts for the senior Egyptian manager and down to the last employees. So I tell them: our plant is number one, and we cannot fail.

The transplantation of ICT was not complete across the organization because of management's indecision regarding what data to frame in ICT tools as well as language-related problems. These findings, as we shall see, support recent research about the importance of language in multinationals (Fredriksson *et al.*, 2006). The first problem is that, at certain levels, information is not framed in ICT tools and is not presented in the employee's native language, namely, Arabic. Consider the following example: Lyla is an Arabic-speaking product manager. She gets orders and distributes them among the employees who work on the production lines, on the sewing machines. The information she uses includes work procedures issued by the client; safety procedures and garment files. This information is written in Hebrew, translated into English by one manager, and then translated again into Arabic. This process is not computer-based; it takes time and leaves her with some hesitation with regard to the end result. Under these conditions, performing her job is difficult for Lyla because of the gap between the quality of the data that she gets and her awareness that "the client is very precise." Furthermore, as a result of this process, Lyla has to approach her managers with questions seeking clarification, which she feels uncomfortable doing because of the distance between employees and superiors. In this case, although managers try to promote the notion of "a quality driven organization," the local culture which prefers authoritarian boss-employee relationships hinders down-up communication (Brown and Ataalla, 2002).

The example demonstrates the difficulties that arise in routine work processes in multilingual organization when data is not handled by an ICT system and employees speak more than one language.

Another expression of difficulties has to do with the choice of language and the denial of access to information. According to one Egyptian employee:

Israelis are not aware of the fact that they need to speak English instead of Hebrew. When they speak Hebrew, we do not understand. There is no decision regarding a common language. Furthermore, materials (e.g. product files) arrive in Hebrew, as does data in the computer.

Bege'd's management adopted an instrumental perspective regarding ICT and they made efforts to propagate technology as the core of the organization's culture.

Yet they devoted little attention to decisions regarding the corporate lingua franca or a pluralist language solution (Janssens *et al.*, 2004). Because the firm has not established a policy regarding the use of language, we find inconsistency in the norms associated with language use. The people who find themselves in the most difficult circumstances are those who have insufficient language skills to draw attention to their difficulties. Thus, managerial decision-making regarding what data to frame in ICT tools and who will be exposed to what kind of ICT tools influences power relations in the organization by granting or denying employees access to data and hence influences their performance as well.

A more sensitive approach regarding the use of language in an ICT tool can be seen in Bege'd's selected database software, Movex, which is used by the accounting department, the cutting room, and the storage room, as well as in the production and planning rooms. In this case, the organization management adopted pluralistic language solutions by the establishment of support in both English and Arabic. The IT person reports that the software is written in English, but it has been translated into Hebrew and then again into Arabic. He noted: "The problem was how to translate it to Arabic. I wanted to find the meaningful terms in Arabic but also to find those terms that people would understand." This responsiveness to the choice of the language (and to people) in an ICT tool may result in better use of the technology.

Thus, we see that ICT was accepted in the Egyptian plant in the wake of some pressure from the initiators, whether the British customer or the Israeli headquarters. These initiators had the formal power, the critical resources and the legitimacy to induce changes (Hardy and Phillips, 2004). Israeli managers effected the transplantation of ICT by promoting an organizational culture focused on technological progress, and by appealing to national pride to enhance a pro-technology orientation (Markus and Pfeffer, 1983). Yet despite these efforts, lower level employees have limited access to data and to ICT tools that have not been translated to Arabic.

ICT as a cultural product

ICT in Bege'd includes computer-based processes and production, an e-mail system, and specific applications for such areas as accounting and inventory. There are several computer stations that provide information about the work flow: receipt of fabric, cutting, entry into and departure from the sewing area, and delivery to the storage area. What are the underlying assumptions of these ICT tools? And to what extent does Bege'd's culturally diverse work force accept these assumptions?

ICT has traditionally been designed to provide "a pipeline that will deposit the required data at the proper time to the appropriate decision maker" (Boland *et al.*, 1994, p. 458). The emphasis is on providing the information so that it is useful to both sender and receiver. Most ICT products, including those implemented in Bege'd have come from the West and from English-speaking countries in particular. It is therefore no surprise that designers have traditionally aimed at developing efficient pipelines, in the sense that the information should be easily and correctly transmitted and extracted.

We suggest regarding ICT as a cultural product of a specific business oriented Western discourse. A discourse system can be defined as a way in which a particular group of people use language to promote their conception of truth or reality according to their ideology (Fairclough, 1995, p. 135). In an organization, employees are simultaneously members of multiple discourse systems, such as a professional group and gender and age

groups (Van Dijk, 1997). In multinationals, as is in our case, employees also often differ culturally and are members of different cultural discourse systems.

As discussed before, creators of ICT tools have aimed at developing efficient conduits. One can argue that ICT tools are “cultural products” of utilitarian discourse. The utilitarian discourse system is dominant in business, government, and academe, especially in the West (Scollon and Scollon, 2001). The ideology underpinning utilitarian discourse includes a belief in progress, individualism and equality and a definition of human beings as rational and economic entities. Utilitarian discourse strives for clarity, brevity, and sincerity, which are highly valued. The preferred forms of communication within the utilitarian discourse system are anti-rhetorical, positivist-empirical, deductive, individualistic, egalitarian, and public (Scollon and Scollon, 2001).

When examining the transplantation of ICT as a cultural product we found that there were cultural barriers in the application of these tools. A technical support employee describes the situation:

In the beginning, the Egyptians said that they would do something, let's say update the information, but they did not respond on time. We had to teach them that time has meaning. We also had to teach them that there should be a fit between the reality and the report. We used management as a means to put pressure on them.

The assumptions of the utilitarian discourse regarding efficiency and accuracy were unfamiliar to Egypt-based Begeed employees, and managers had to educate the employees.

At present, in the Egyptian plant, ICT is perceived by several employees as a system that saves time and reduces anxiety regarding the completion of their work in a demanding environment.

The way the e-mail system is utilized in the company is another example of the acceptance of the assumptions of the utilitarian discourse. In Begeed, e-mail is used as a way to transmit task-oriented information. We saw almost no evidence of jokes, gossip, or any other kind of non-task communication. The e-mail culture was built as a medium for conveying “real” documents, as one interviewee put it. That is, transferring information via e-mail is considered evidence of the performance of a specific act.

Although employees have learned to accept several cultural aspects of ICT tools, we found that barriers remain with regard to others: they expressed difficulties to get instructions from superiors via ICT tools. An Israeli manager at the Egyptian plant indicated that he could not use ICT tools because the employees would feel that communication via a written document meant that the manager did not trust them.

The manager's responses demonstrate the importance of face-to-face communication for the Egyptian employees. These workers would be offended if they got written instructions from their superior. Our results support previous research about communication in sewing plants of an Israeli company operating in Arab communities. Drori (2000) found that the use of a professional language with its own vocabulary, codes, and meanings could help unite the sewing plants. Direct communication channels existed between the managers and workers alongside mediation by supervisors, and much of it took place and was interpreted as people interacted directly with each other.

Such results can be explained in light of the musayara discourse system, the Arabic way of speech. The term refers to “accompanying” one's partner in conversation.

Behavior designed to enhance commonalities rather than differences, cooperation rather than conflict, and mutuality rather than self-assertion would be interpreted as involving *musayara* (Griefat and Katriel, 1989). The goal of language from the Egyptian side thus is relationship oriented (Drori, 2000; Brown and Ataalla, 2002). Managers therefore need to ask whether ICT tools in their current forms will indeed be useful, and when and to what extent it would be effective to introduce ICT into organizations that are characterized by a high level of informality and a preference for face-to-face communication.

Conclusions

The results of this study support earlier research that organization culture and power relations are important factors in understanding the implementation process of ICT tools. More specifically, in our case, obtaining initial acceptance depended on pressure by initiators who had the formal power, the critical resources and the legitimacy to compel implementation (Hardy and Phillips, 2004). However, while previous research reflects mainly on actors within the inner cycle of the organization sphere, we found that one of the major actors in the process of implementation was a major customer which may be considered as part of the external cycle of the organization sphere. Actors in similar position might have an impact on the implementation of ICT in other organizations.

Regarding ICT implementation and the organization power relations we also found that ICT *per se* did not meet resistance or hostility from the employees, despite their unfamiliarity with the technology. Furthermore, those at lower levels did voice frustration at the neglect of their needs for customization and targeted assistance. We argue that this neglect has significant consequences in international organizations in which work is performed by employees who speak different languages. Thus, the transplantation of ICT tools in multinational organization should consider the employee language.

In line with earlier research we found that organization culture takes an important role in the implementation of ICT tools. In our case, we find consistency between the technology orientation of the organization and the rhetoric and managerial efforts to establish technology centred organization culture. This consistency might be one factors explaining successful implementation.

In addition to the above, we find two contextual factors that are relevant to the implementation of ICT which are not extensively discussed in the literature.

The first refers to the characteristics of the organizational field in terms of the level of its technological development. The relatively low level of technological development in the Egyptian organization field on the one hand, and the interest of Begeed employees to be part of technologically advanced organization on the other hand, explain employees' general positive orientation toward the implementation of ICT tools. Management rhetoric which draws on national pride also explains a relatively successful implementation process and is based upon the technological advancement of the firm compared to its surroundings. Thus, the organizational field might have an impact on the implementation of ICT tools. Future research should further consider the organization field with a possibility to use the perspectives of institutional theory (Scott and Meyer, 1994; Powel and Dimaggio, 1991).

The second refers to the impact of local culture on the implementation process. In our view, ICT tools are a cultural product of the utilitarian discourse. We found that non-Western employees may not always put up with the assumptions embedded in

these tools by their Western ICT designers. For example, Begeed's Egyptian employees place a high premium on social relationships, so they disdain use of e-mail, for example, for anything other than specific task-oriented communications. Managers in the plant find it necessary to convey important instructions in person, rather than electronically, or in writing.

We argue that more flexible designs of ICT should take account the particular discourse system employed in order to achieve a better fit between the ICT tools and the users.

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