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THE HIDDEN SIDE OF E-MAIL USE: HOW TO EXPLAIN PROBLEMS OF ELECTRONIC COORDINATION?

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Abstract

Fast becoming ubiquitous, e-mail is the main ICT used by managers. However, its use is of renewed interest in managerial activity. Despite the productivity expected from the electronic coordination, it is raising some problems. This paper aims at improving our understanding of coordination constraints related to e-mail use.

Data were collected through interviews conducted with seventy-four managers. Our study suggests that while the use of electronic mail was expected to bring more flexibility, it may also introduce new constraints. Three problems are particularly identified: the use of e-mail can create problems of misinterpretations, the medium can be used to get ride of the task without contributing to its resolution and it contributes to conflict escalation.

In addition to the objective features of the medium, we explain the problems of electronic coordination by the constraints related to the use of e-mail and its instrumental use. In accordance with the emergent perspective, which is our framework, we demonstrate that e-mail can be used purposefully in an unproductive way. Users adapt the medium to fulfill their own objective.

Keywords: electronic mail, coordination, conflict, managers.

Managers are perpetually short of time and need therefore to cope with “time famine”1 (Perlow, 1999). However, they spend an important part of their time communicating and use a diverse range of communication tools to do so (Te’eni, 2001). As ICT applications enable them to curtail traditional lags, their use seems crucial for managers’ success. Indeed, their ability to free themselves from space and temporal constraints can explain the growing interest of these media. E-mail is the main ICT used by managers. It has become omnipresent (Van den Hooff et al., 2005). Indeed, it is expected to enhance productivity as it increases the speed and raises the bandwidth of communication while it reduces its cost (Fulk and Desanctis, 1995). Electronic coordination is then less constraining (Crowston, 1994; Malone and Crowston, 1994). The ability of e-mail to surmount temporal and space constraints can even explain its choice (Van den Hooff et al., 2005). However, its growing use raises some issues about e-mail overload (McKeen and Smith, 2004) and its consequences on relationships in organization (Te’eni, 2001). Not being able to transmit as many cues of interactions as face to face, the use of electronic mail can be at the origin of problems of misinterpretations and a source of conflicts. It turns out that electronic communication can create new constraints (Rennecker and Godwin, 2005).

This paper aims at improving our understanding of coordination constraints related to the use of e-mail. The improvement of our comprehension of these problems can help us to better manage this medium.

1 “their feeling of having too much to do and not enough time to do it” (Perlow:57 )
We first discuss our theoretical background; and then describe our research methods. Our results are presented in the third section. The last section discusses the main contributions of our paper.

**Theoretical Background**

According to information richness theory (Daft and Lengel, 1984; 1986), media are classified in a continuum based on four characteristics (Daft, Lengel and Trevino, 1987; Huber and Daft, 1987):

- ability to facilitate instant feedback,
- ability to convey multiple cues,
- ability to transmit a varied language,
- ability to establish a personal focus.

On the basis of these criterions, face-to-face is regarded as being the richest communication media, followed by telephone and then by electronic mail. Media differ in their ability to facilitate understanding (Daft, Lengel and Trevino, 1987). However, this classification is criticized by Culnan and Markus (1987) because face-to-face communication is taken as a reference. Panteli (2002) points out that electronic mail is richer than it is suggested by information richness theory. E-mail has the properties of both oral and written communication. However, Nohria and Eccles (1992) note that face-to-face interactions allow immediate feedback and capacity of interruption and repair which guarantee mutual understanding. In contrast, electronic communication can cause incomprehension and ambiguity. De Vaujany (2001) points out that e-mail can be used as a means of non-communication. It can even generate conflicts (Friedman and Bailey, 2003). Friedman and Currall (2002) note that conflicts managed by electronic mail can be more virulent than those carried out face to face. According to Poole et al. (1991), the risk of conflict escalation is more important in computer-mediated communication. The use of e-mail can then contribute to the deterioration of relations between individuals in the organization. However, electronic mail can be used by communicators even when collocated (Fiol and O’connor, 2005). Furthermore, it can be used when interlocutors do not wish to communicate face-to-face (Friedman and Currall, 2002), or want to avoid meeting (Zack and Mckenney, 1995).

While e-mail extends the choice of communication means by enabling new opportunities of coordination, its use can create misunderstandings and even conflicts (Weber, 2004). However, some authors note that when interlocutors use electronic communication, they can develop the same relational level over time (Walther, 1995; Chidambaram and Jones, 1993; Chidambaram, 1996). These contradictory outcomes of electronic coordination enable us to decry technological determinism. According to this perspective, changes observed are given or constrained by the technology, which acts like an exogenous variable (Markus and Robey, 1988). The deterministic perspective has been criticized by other research (Markus and Robey, 1988; Orlikowski and Robey, 1991; Orlikowski, 1992; Desanctis and Poole, 1994; Lea, O’Shea and Fung, 1995; Robey and Boudreau, 1999).

We adopt instead an emergent perspective. In this view, technology is socially constructed (Barley 1986; Desanctis and Poole 1994; Orlikowski, 1992; 2000; Peters, 2006) and its outcomes are emergent and can then be different from those initially anticipated (Cousins and Robey, 2005; Robey and Sahai 1996; Orlikowski and Hoffman, 1997; Shultz and Orlikowski 2004). These two arguments are discussed below:

First, technology is a social object (Barley, 1986), which is “interpretively flexible” (Orlikowski, 1992). Orlikowski (2000) distinguishes between technologies as artefacts and technologies-in-practice. Being physically and socially constructed, its outcomes are then products of both materials and social dimensions. Technology is thus a “social object” (Barley, 1986). People make sense of their uses and develop their own comprehension of the medium through their interactions with the technology. Weick (1990) considers that technology is equivocal: it can be subject of several interpretations and even misunderstandings (Griffith 1999). Technology can hence be used unfaithfully to its “spirit” (Desanctis and Poole, 1994).

Second, the results of this use are emergent and can be different from those initially envisaged. The emergent perspective recognizes the improvisation that result from the use of the medium (Weick, 1998; Zack, 2000; Boudreau and Robey, 2005). However these unexpected outcomes are not easy to comprehend (Rennecker and Godwin, 2005).

To conclude, whereas electronic coordination enables to surmount space and temporal constraints, it is not free from limits. Our literature survey shows contradictory results of its outcomes on coordination. Further investigation is then needed to improve our understanding of its outcomes. We aim in this paper at explaining electronic coordination constraints.
Charki – The Hidden Side of E-mail Use

Methodology

Data were collected through in-depth interviews that lasted on average one hour. We focus on managers as they spend an important part of their work communicating through different media. In addition, information richness theory makes the assumption that the medium use is not suited to managerial activities. Managers’ use of e-mail gives raise to a certain amount of controversy.

We interviewed seventy-four managers (upper and middle) who belong to twenty-eight big companies located in France. Managers of our sample have a regular use of e-mail in their activities. They were interviewed about their use of e-mail and its perceived outcomes in their activity. We only focus in this paper on its outcomes in coordination.

Our interviews were all, except one, recorded and fully transcribed. All recorded interviews were coded by using Nvivo software. The codes list was determined through successive iterations between theory and data. However, it was refined progressively, in accordance with the recommendations of Miles and Huberman (1994). The codes we used and the corresponding definitions are presented in table 1. Codes used in this study belong to a larger list.

Table1: List of codes used

<table>
<thead>
<tr>
<th>Codes</th>
<th>Definitions</th>
<th>Main references</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexibility</td>
<td>E-mail use allows managers to overcome temporal and space constraints.</td>
<td>Sproull (1991)</td>
</tr>
<tr>
<td>Messages interpretations:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Messages ambiguity</td>
<td>Messages are ambiguous and can hardly be understood.</td>
<td>Burgess et al.(2005)</td>
</tr>
<tr>
<td>Non-adapted medium</td>
<td>The use of e-mail can be sometimes inappropriate and therefore leads to misunderstandings and waste of time.</td>
<td>Burgess et al.(2005)</td>
</tr>
<tr>
<td>Conflict escalation</td>
<td>E-mail use can lead to the intensification of the conflict.</td>
<td>Friedmann and Curall (2002)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Poole et al. (1991)</td>
</tr>
<tr>
<td>E-mail use as a mean of non-coordination</td>
<td>E-mail can be used as a mean of non-coordination. It can be used to get discharged from the task in hand.</td>
<td>Weber (2004)</td>
</tr>
<tr>
<td>Messages management:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Messages overload</td>
<td>E-mail use raises issues about the increasing number of messages.</td>
<td>Burgess et al. (2005)</td>
</tr>
<tr>
<td>Non-targeted messages</td>
<td>A large number of e-mails are untargeted and irrelevant.</td>
<td>McKeen and Smith (2004)</td>
</tr>
<tr>
<td>Shorter delay in processing</td>
<td>E-mail use requires shorter delay in processing messages.</td>
<td>Weber (2004)</td>
</tr>
<tr>
<td>e-mails</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longer time spent processing</td>
<td>Managers spend more time processing the increasing number of e-mails.</td>
<td>Burgess et al. (2005)</td>
</tr>
</tbody>
</table>

The use of Nvivo software enables us to systematically check our coding. At the end of our research, an intra-codes agreement of 99% was found. In parallel, we obtain an inter-codes agreement of 98%. Double coding was done by two other researchers in information systems in the basis of 15% of our sample.

Codes were analysed qualitatively (Bardin 2003). Our aim was essentially to fully understand the managers’ representation of electronic coordination constraints. It is then not the frequency of codes that matters but rather their presence. After coding, we seek for the construction of the chains of evidence (Miles and Huberman 1994). We look then for the relations between the different analysed codes.

Results

As it becomes omnipresent, an important proportion of the activity is received and delegated by electronic mail. It allows managers to have more flexibility by overcoming temporal and space constraints.

- “…we do no longer wonder what time it is at San Francisco, at New Delhi, we send our message without carrying about time difference…”
However, its use can raise some coordination constraints. The use of the electronic mail can even contribute to the non-resolution of problems. Three problems are particularly identified in our study:
- The use of e-mail can create misinterpretations;
- E-mail can be used to get ride of the task without contributing to its resolution and;
- E-mail use can contribute to conflict escalation.

**Misinterpretation of the messages**

The electronic mail can easily create incomprehension and misunderstandings between communicators. It can easily make a polemic.

- “…when we communicate electronically, we need to be very careful to avoid ambiguities and possible misinterpretations…”

The use of another medium instead would have allowed a faster processing of the task.

- “…because of this risk (ambiguity), we can have three, four, five electronic exchanges without reaching mutual understanding… we should have used another medium instead…”

Our analysis shows that this risk of incomprehension can either be explained by the objective characteristics of the electronic communication and the way the medium is used.

**Objective features of e-mail:** it mainly consists of the asynchronous character of the communication and its written format. As communication is asynchronous, some cues are filtered out. The risk of incomprehension is then accentuated by the absence of an immediate feedback.

- “…we think that what we send is clear but the recipient can have another interpretation of the message… misunderstandings are easy as we do not have an immediate feedback…”

In addition, in contrast with face-to-face which creates a shared context; electronic communication is generally written and read in two different contexts (Nohria and Eccles, 1992). A gap can then exist between the intentions of the writer and the perceptions of the reader of the message. We also note that e-mail is often written in spoken language, which accentuates this gap. However, whereas it is accepted that electronic messages are not written with the same rigour as the other support of written communication, these abuses increase the risk of misunderstandings. We note recurrent abuses such as the use of abbreviations, the spelling mistakes, the length of the message…

**Constraints related to e-mails management:** E-mail overload is recurrent in our interviews. E-mail raises issues about the increasing number of messages, which implies more time dealing with them.

- “…the risk is that we are drowning under the number of e-mails…”

- “…I spend at least three or four hours processing my e-mails every day…”

In addition to the use of e-mail to diversified tasks, overload can also be explained by the non-targeted messages. E-mails can easily be sent to a large list of recipients thanks to its options such as “reply to all” function and the forwarding of the messages. As a consequence, a large number of e-mails are irrelevant and time-consuming.

Furthermore, the use of e-mail imposes shorter delay in answering to the incoming messages. The use of e-mail requires being very reactive.

- “…we become very impatient with e-mail…if we do not have an answer within the day, we will be wondering,… it changes our behaviours…”

It turns out that whereas e-mail overload implies spending more time dealing with messages; time pressure shortens the delay of handling them. As managers are short of time, e-mails are read, written and answered very quickly. These constraints accentuate the ambiguity of the communication and its misinterpretation.

**The use of the electronic mail as a mean of non-coordination**

Instead of improving coordination as it is expected, e-mail use can be in some cases problematic. It can be used to get discharged from a task in hand by sending it to another recipient without contributing to its resolution.
“…It is an excellent medium to bury a problem…it is enough not to put the good question … and by setting in copy people who do not want to interfere…you are covered and at the same time you get ride of the problem”

Options like setting in copy and the forward of the message make easier the dilution of the problems. Moreover, as e-mail is asynchronous, the sender can not instantly check that the message was taken into account. It turns out that the objective features of e-mail can be used in an instrumental way, which contribute to the non-resolution of the problems. E-mail use can in this case threaten coordination.

Conflict escalation

Our analysis shows that electronic conflicts are characterized by their intensity, their length and the number of people involved.

Electronic communication is likely to be more aggressive than face-to-face. People tend to have less inhibited behaviour when they use e-mail.

“…electronic exchanges are more violent than face-to-face…we can easily insult each other via e-mail…”

As some indices are filtered out, conflicts can hardly be self-regulated. People can not be easily aware of the aggravation of the situation. An external intervention is often required to put an end to the conflict. In addition, our analysis shows that electronic conflicts last longer than face-to-face because of the asynchronous character of the communication. We also note that as e-mail enables one to many communications, it is very easy to involve other people into the conflict.

To summarize, our study shows that electronic conflicts are more virulent. They last longer and involve more people. In addition to the objective features of e-mail, the way the medium is used can better explain the conflict escalation. Messages exchanged during a disagreement can be used later. This would lengthen the conflict and contribute to the deterioration of relations in the organization. This risk is accentuated by the use of e-mail instead of face-to-face communication, particularly with collocated recipients.

“…it is unbearable…we are at the same open space but we use e-mail to communicate with each other…”

To conclude, in addition to the constraints related to the objective features of the medium, we point out electronic coordination problems caused by the medium use. In fact, managers need to cope with e-mail overload and time pressure when dealing with electronic messages. They also create a new genre when they communicate electronically, however, the lack of rigor and formalism in e-mails accentuate the risk of misunderstanding. In addition, the medium can be used in an instrumental way. E-mail can be used to get discharged from the task and contribute to conflict escalation.

Discussions and Contributions

Our study helps us to better understand constraints related to electronic coordination. Whereas e-mail use offers new coordination opportunities by freeing up managers from temporal and space constraints, it brings new unexpected outcomes on coordination. Contrary to what it is suggested by information richness theory; these constraints are not only explained by the objective features of the medium. Instead, we demonstrate that these unexpected constraints can either be explained by the objective features of the medium and how the medium is used. Managers enact their use of e-mail which can either facilitate or constrain their action (Orlikowski, 1992). We focus in our study in coordination constraints. Our results are thus in conformity with the emergent perspective which is our framework.

Electronic coordination constraints are summarized in table 2.

<table>
<thead>
<tr>
<th>Electronic coordination constraints</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective features of e-mail</td>
<td>Asynchronous communication</td>
</tr>
<tr>
<td></td>
<td>Written communication</td>
</tr>
<tr>
<td></td>
<td>An external memory that can be processed</td>
</tr>
<tr>
<td></td>
<td>Options like setting in copy and the forward of the messages</td>
</tr>
</tbody>
</table>
Absence of rigour in the writing of the electronic messages
E-mail overload
Time pressure in processing the incoming messages
The use of e-mail to get ride of the task in charge
The use of messages exchanged during a disagreement in order to lengthen the conflict
The use of e-mail to involve other people in the conflict

We analyse successively each of these constraints.

**Objective features of e-mail**

We demonstrate that the main features of the medium can partly explain coordination constraints. Whereas its asynchronous characteristic can not facilitate instantaneous feedback, its written format does not convey multiple cues. These features do not facilitate mutual understanding and explain its classification by information richness theory as a lean medium (Daft and Lengel, 1984; 1986). In contrast, we emphasize other features of e-mail, which are at the origin of electronic coordination constraints. We particularly show that the existence of an external memory is used to lengthen conflicts and options like setting in copy and the forward of messages can either be used to involve other people in the conflict or to easily get discharged from the task.

**Constraints related to the use of e-mail**

Along with Panteli (2002), we show that e-mails are not written with as much formalism as the other forms of written communications and can contain abbreviations. We show that the absence of rigour in the writing of the electronic messages can accentuate problems of interpretations. Nonetheless, we emphasize two other constraints to explain problems of electronic coordination; it consists of e-mail overload and shorter delay in processing e-mails.

In accordance with authors such as Burgess et al., 2005; McKeen and Smith, 2004 and Weber, 2003, our study highlights e-mail overload, which can either be explained by the extended use of e-mail and untargeted messages. E-mail overload makes harder to answer correctly and on time the incoming messages. In addition, we show that the use of electronic mail imposes shorter delay in answering the incoming messages. Both e-mail overload and the need to cope with time pressure when dealing with messages contribute to accentuate the risk of misinterpretation and incomprehension.

Our study points out some unexpected constraints related to e-mail use, which threaten electronic coordination. These constraints are explained by the abuses related to the medium use. Managers generate new constraints when they communicate with e-mail. These results are in accordance with the emergent perspective.

**Instrumental use of e-mail**

Furthermore, we demonstrate that e-mail can be used in an unproductive way. It can contribute either to non-coordination or to conflict escalation. We particularly show that e-mail can be used to get ride of the task in charge, to lengthen the conflict and to easily involve other people in the disagreement. Along with Lamb and Kling (2003), we acknowledge that users “negotiate” the objective features of the medium to fulfil their own aim. Coordination constraints are in this case the result of the use of the medium unfaithfully to its spirit (Desanctis and Poole, 1994). As it is equivocal, the use of e-mail is prone to several interpretations and even a source of incomprehension (Griffith, 1999). Users have indeed diverse interpretations of the technology and thus adopt different adaptation strategies (Beaudry and Pinsonneault, 2005). They adapt or reinvent the medium to suit their own purpose (Lee, 1994; Ngwenyama and Lee, 1997). E-mail can then be used in an instrumental way. Our results are then along with the sense making literature (Weick, 1990; Griffith, 1999).

The identification of these three coordination constraints and the relation between them are our main theoretical contributions. This study has limitations that should be acknowledged. In fact, we focused in this paper on the problems of electronic coordination without considering the organizational context. Future research should examine these constraints in a particular context.
Conclusions

The examination of the use of e-mail shows that the medium introduced a greater flexibility by freeing managers from space and temporal constraints. However, its use can be at the origin of new constraints. We demonstrate that as it is equivocque (Weick, 1990; Griffith, 1999), e-mail can be used in an ineffective way. The severity of the problem is accentuated by the extended use of the medium. Besides, companies are becoming aware of the problems related to e-mail use. By identifying these problems, this paper improves our understanding of their constraining effects. It is however the first step to a better management of these constraints.

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