

## Choice, use and appropriation of email: an ever evolving technology

Wadi TAHRI

ENCG El Jadida

University Chouaib Doukkali

El Jadida, Morocco

[wadi.tahri@gmail.com](mailto:wadi.tahri@gmail.com)

### ABSTRACT

Electronic mail became the most commonly used means of communication in companies for the first time in 2007 and has replaced traditional tools such as postal mail, the fax and the telephone<sup>1</sup>. Curiously, there is little research dealing specifically with the subject (Weber, 2004). Even where research has been carried out, results are often contradictory in terms of the context and subjects under review.

The aim of this paper is to examine changing trends in the choice, the use and the appropriation of e-mail. We carried out a qualitative framework in a multinational company. The main premise is that e-mail is a ubiquitous technology which needs to be used judiciously and efficiently, as “productive” use would appear to depend on its specific features being appropriated correctly. Our paper attempts to provide researchers with a first step towards a more comprehensive model, stressing the role played by perception. Our results have also given practitioners a better understanding of problems in organizations caused by intensive e-mail use and of its impact on collaboration and productivity. More questions need to be asked on its real use in situ, especially with its increasing presence in mobile telephones.

**Keywords:** E-mail, perception, use, behavior, collaboration, productivity

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<sup>1</sup> According to a study carried out by the Datamonitor group in 524 companies.

## 1. INTRODUCTION

Since the 90s real technologies for exchanging information and communication have been developed, such as e-mail, videoconferencing, distance working platforms etc. and today they are reaching a mature stage in their development. Do we still need to present the advantages that bring to the world of business?

On the one hand their choice in organizational communication is no longer a question, Orlikowski (2003) puts investment in information technology (IT) into perspective and suggests a closer focus on their real uses, appropriations and results. On the other hand, a survey of various studies on the uses of ICT in information systems (Davis et al., 1989, 2003; Orlikowski and Baroudi, 1992; DeSanctis and Poole, 1994; Weick, 1995; DeVaujany, 2000; Reix, 2004) shows very different impacts according to professions and individuals. The appropriation of technologies constitutes today a key question in information systems.

In this article we suggest to analysis changing trends in the choice, the use and the appropriation of the most commonly used mean of communication in companies: e-mail. The central research question is which usual differentiation and appropriation process can be indentified? And what is their impact on collaboration and productivity? However, communication processes lie at the heart of the organization's operation. Their analysis reveals communication's complexity and shows that it cannot simply be reduced to the transmission of a more or less coded message (Reix, 2004).

Interactivity, which is an essential feature of e-mail, allows employees to communicate and express themselves freely so that they can accomplish their work efficiently. A feature that proliferates the intensive use of email specially in big companies. Results shows that depend on the appropriation of the technology and the organization of teams in the decision-making process.

In the first part of this paper, we shall outline the analytical framework of the subject

of our research. In the second part we shall present a case study in immersion in a big company. The request made by this company bears witness to the new difficulties faced by the employees of large companies in managing their professional activities and their interpersonal relationships.

## 2. LITERATURE REVIEW

The introduction of collaborative working tools into an organization is initially the result of a strategic vision, indeed of a desire for change. Questions can be asked thereafter about the success of a technology, people's perceptions and then user's behaviors due to the dematerialization of relations.

In this part we shall focus on the analysis of e-mail firstly as an information and communication tool, and secondly on its choice, use and appropriation, which have to be addressed following the introduction of any new technology.

### 2.1 E-mail: an information and communication tool

There are several kinds of collaborative systems for various working configurations which can be divided into the two dimensions of time and space.

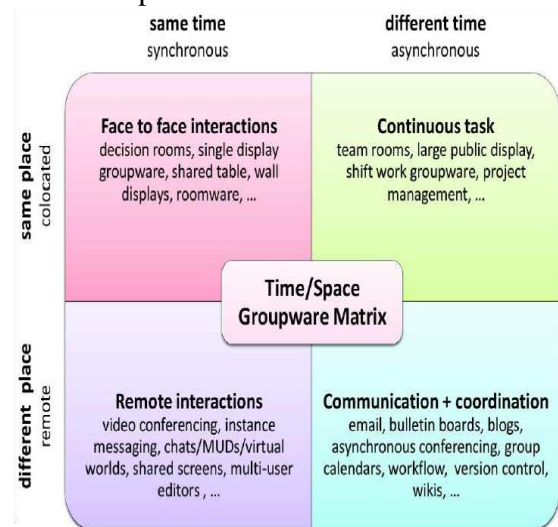


Fig. 1: Time-space matrix (Johansen, 1988)

We can define the features of groupware<sup>2</sup> according to Johansen's classification (1988):

- Synchronous: work group participants operate in real time and are in direct written/voice and/or image contact.
- Asynchronous: this implies delayed-time operation, where group members act on information when they wish by means of a shared electronic space. E-mail is primarily regarded as groupware, because it is a software programme which allows a group of people to communicate and to share documents at a distance.

**Compressing time:** After the launch of e-mail, users were able to communicate around the world and thus decrease the response time necessary between senders and recipients (Shannon and Weaver model, 1948). New networking structures emerged to support real time collaborative work and a reorganization of work by removing the hierarchical and authoritative barriers of the Taylor approach. Measuring time lost its effectiveness because of the overlapping nature of tasks. Working groups depend upon each other and the principle of task separability is no longer relevant (task interdependence). Thus, it is no longer appropriate to time each individual's work, as the required productivity depends on decisions taken between the group. An example of the impact of groupwares is the debate raised over the time taken for processing e-mails in the company and private e-mailing in the work place<sup>3</sup>.

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<sup>2</sup> Groupware includes all the processes of a group working towards a common objective, plus the software designed to facilitate this groupwork (Comtet, 2006). Its aim is to create a shared material and virtual workspace, underpinned by dynamic (synchronous/asynchronous) collaboration of information sharing and communication (beyond spatio-temporal constraints).

<sup>3</sup> For more on this topic see Rodhain F. and Agarwal R. (2001). "Le message électronique : une propriété privée? Perception des salariés quant à la propriété de leurs courriels et au respect de leur vie privée sur le lieu de travail", *Système d'Information et Management*, Vol. 6, n°4, pp. 49-72.

***Bringing people closer together in space:***

Many of today's large companies owe their existence to information systems which they were able to exploit (Porter, 1999). The most common and most significant examples are Google and Microsoft, which allowed them to access new markets, to work remotely and to sell their products. Globalization is increasing competition between companies and e-mail has reduced distances (the space) between people and constitutes an element of competitiveness between large companies. Thus, groups in multinationals working via electronic communication, manage to overcome space and time constraints by creating workspaces resembling a face-to-face situation (Kiesler et al., 1985). We can say that the features of e-mail, i.e. instantaneity and interactivity have resulted in an evolving concept of time and space and in facilitating individual and organisational communication and information flows. This allows us to postulate that collaboration and productivity are more effective by using the media.

***Reducing costs:*** For I.T. Directors, efficiency is synonymous with costs. Indeed, this parameter has become their number one priority in the current economic climate<sup>4</sup>. In order to improve efficiency, I.T. Directors encourage increased use of collaborative tools, such as e-mail. Indeed, the costs of data and communication processing have fallen. The example of the multinational company Dell which we shall study in the second part of this paper illustrates our point well. By selling direct to customers via ICT, Dell cuts out all intermediaries (wholesalers, retailers, etc.) and thus makes its huge economies of scale. "Information travels down electric wires or by electromagnetic waves, whereas paper is slow and heavy and has to be transported by man" (Lhoste and Léopold, 1999: p.9). This leads us to note that the reduced cost of electronic communications has resulted in an exponential

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<sup>4</sup> According to a recent study by Gartner, source: <http://www.artesi.artesi-idf.com>.

increase in the volume of information exchanges in the networks.

**Developing an organization's memory:** E-mail is a groupware, which is useful for storing knowledge while developing the organization's memory. The objective is to accumulate information exchanged in the network. The literature on systems designed to back up the organization's memory is recent (Abecker and al., 1998; Olivera, 2000) and reveals the diversity of tools used to store and locate knowledge within organizations (Bourdon, 2004). Weisband (2002) supports the notion of the existence of a collective memory responding to management's requirements and leads to a reduction in uncertainty. It is all the more important in the absence of specific coordination mechanisms (Schlichter and al., 1997). The ease of interaction and the accumulation of information contribute a reinforcement of the organization's collective memory (Le boeuf, 2002).

In brief, e-mail is, then, a remote information and communications tool (comparable with the postal service), but transported by electronic means (a computer), in the form of digital files by I.T. networks (Internet or Intranet)<sup>5</sup>. E-mail involves the company as a communications and information system. It organizes and manages information flows which circulate within the organization (internal communication) or between the organization and its environment (external communication). Consequently, we can say that e-mail is a collaborative tool which allows organizations to compress time, reduce the physical distance between people, reduce costs and develop an organizational memory.

## **2.2 E-mail: between choice, use and appropriation**

The availability of a medium, as with other information and communication technologies,

does not guarantee it will be adopted. Our analysis will focus on the choice, the use, as well as the appropriation of e-mail.

### **2.2.1 The choice of the technology: a universal adoption**

The decision to install e-mail in companies in the early 90s seemed to be driven not only by strategic concerns, but also by the social concerns of decision-makers (Turet, 1991). The decision was influenced by external economic and social pressures and internal problems within companies, such as conflicts, the crisis of confidence, falling productivity, resignations, etc.

Under these conditions, research into the factors influencing the choice to communicate by e-mail, as opposed to the other means of communication, has been carried out, but often remains contradictory (Tahri and Fallery, 2010), due to the use of different individual factors (age, sex, nationality, etc.) and organisational factors (hierarchical position, industry sector, size of company, etc.). The critical mass theory (Rice and al., 1990) seems to be relevant to understanding the influence of the choice of media. Indeed, critical mass takes into account the social specificity of the group, and it represents the extent to which the company is sufficiently equipped to allow group communication via the medium (Uhlig and al., 1979). According to this theory, behavior does not occur spontaneously. Perceived accessibility by senders and recipients influence individual e-mail use. It is therefore legitimate to think that perception could be at the root of the choice, and thus of a more or less intensive use of e-mail. Over several years the popularity of e-mail in companies has continued to grow to the detriment of other communication tools. Indeed, e-mail has taken a predominant role in the employee's working day, to such an extent that it is becoming difficult to manage without it. According to a study by the Radicati Group in 2008, e-mail has for the first time become the main working tool and is replacing

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<sup>5</sup> Adapted from a quotation by Pavie O. (1999). *Microsoft Outlook, Organiser, gérer le courrier électronique*, éditions Eyrolles, Paris.

traditional means of communication, such as the fax and the telephone. Face-to-face communication remains necessary, however, in certain situations (meetings, individual discussions, etc.). The advance of e-mail into mobile technologies (telephones, PDA), the increasing availability of wireless broadband internet connections, and the recognition of electronic mail as constituting legal evidence in companies have contributed to the rapid development of this technology. We have to note that the study of choice is no longer appropriate. Over time, out of all of the other existing means of communication, e-mail has become established as the predominant medium. It is continually developing by offering new functions, by allowing users, for example, to archive huge volumes of data and to send any type of multi-media document.

### **2.2.2 The use of technology: the role of context**

McLuhan (1969)<sup>6</sup> suggested that man is not aware of the influence exerted on him by the media. Indeed, according to McLuhan, the essence of communication is the communication itself and its medium rather than the message communicated. This idea has provoked a great deal of debate, hence the importance of according particular attention to the concept of perception. According to McLuhan, even if the sender does not have a precise idea of the message to transmit initially, the message is constituted in the channel used. The very use of the medium carries meaning and thus fashions the message. The message, therefore, becomes an independent variable.

If we place the use of e-mail in an organizational context, it is because we want to get to grips with the influence of situational

variables. The understanding of "usage"<sup>7</sup> is closely related to the context of the activity carried out by users (Kuuti, 1991). It is difficult to understand an action outside its context or its activity (Bourguin, 2000). Jouët (2000) shows that usages occur in social relations which act as a matrix of their production and are constructed by these usages. Thus, in the case of e-mail, usage is highly dependent on the nature of the relations developed between the users within the organization.

According to researchers, there appear to be differences in uses between the actors of an organization. It is difficult, however, to study all the actors at the same time through a longitudinal study. Whereas the majority of researchers study the use of e-mail amongst managerial or administrative staff, we decided to observe and study the behavior of sales staff (part 2). Behavior is thought to be influenced by individual perception of the medium, the social context (competition, hierarchical pressure, etc.) and interpersonal relations between individuals. Our aim is understand the use and appropriation of e-mail in situ.

We suggest that individual perception emerges through action. It corresponds to the construction of meaning (Weick, 1995) in a complex system (Watzlawick and al., 1972) by the influence of social factors and the correspondence between the task and the technology (task-technology fit theory). Behavior is the result of social and technological perception. It is the result of "equivocity" (i.e. interpretation) of information by the medium.

### **2.3 The appropriation of technology: a dynamic process**

The structuration theory (Giddens, 1987) criticizes technological determinism. It is the result of research which aims to understand

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<sup>6</sup> Marshall McLuhan in 1964 in his book *Understanding Media* astonished the scientific world with his sentence: "the medium is the message", hence the name for the theory of media.

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<sup>7</sup> We will employ the word "usage" when we link the use of the tool to the context.

social structures and action. The idea of structuration incites us to take the social structures through the context of the company via the "duality of structure" and "competence of the actor". Giddens (1987) stresses that there cannot be universal laws in social sciences, not because the investigation and validation methods are in any way inadequate, but because the causal conditions contained in the agents behaviors are unstable.

It appeared interesting, therefore, to study usage by investigating the appropriation (behavior) of the social actor and consequently to undertake a qualitative study on the subject, rather than quantitative, to understand the complexity of communication. The interactionist approach of communication will enable us to study the behavior of the organization's members. We must not forget that the act of communicating cannot be isolated. It is understood within the framework of social routines.

To study appropriation is to try to understand the relation between the group and the technology. Thus, communication by e-mail in the company implies that the actor adapts to the medium. Actors manage their work tasks in accordance with organization's values, while the feeling of collaboration is imbued in the corporate culture and in the involvement in work. Appropriation, in our case, is a form of misappropriation.

In the empirical part we are close to Giddens theoretical framework to explain the observable facts. Our aim is to favour the route of "new practices". Thus, we support the idea of Markus and Robey (1988) on the complexity of the relation between technology and organization and the need to understand the reciprocal effects. The duality considered is that the usages are constructed according to external and/or internal constraints and the users characteristics. Consequently, some "non-conforming" practises transform the uses and relations between actors.

In brief, the appropriation of a technology is a dynamic process, owing to the very fact that

these contradictions are continually being resolved.

### **3. THE CASE STUDY IN IMMERSION**

Considering the results of the literature search, we decided to carry out a qualitative study on the perception and the use of e-mail in a large company. In this second part our objective is to analyze its uses and to understand the changing practices in the company.

#### **3.1 Methodology**

The context defined the direction we took in our research. In order to adopt an "interpretative" approach to our epistemological position, we chose the method put forward by Eisenhardt (1989) based on case study. It is a structured method whose outcome is a representation and an explanation of a complex phenomenon (Yin, 2003) in relation to the conditions, the actors and their involvement (Wacheux, 1996). We carried out the study in a large company because it proves to be a fertile ground to understand the behavior of the social actor we are researching, thus the culture would be all the stronger. Our sample is a group of individuals who are working in teams. We carried out a retrospective longitudinal study over a single nine-month period. This method aims to collect data over time on the same sample, limited to 31 individuals (the majority of whom work in sales). In order to avoid any possible changes in practices which could skew our results and/or lead to a loss of trust between management and employees, we decided to collect our data without the employees being aware of the study at the observation stage, but we made a point of explaining our research project when we moved onto the interview stage. Thus, the other original point of our method is that the employees under observation were totally unaware of our study. To respect the confidentiality of the data on the employees,

we are very careful to preserve the anonymity of interviewees. These conditions are necessary for the validity of our research.

### 3.2 Analysis and data processing

In a qualitative approach theoretical constructs are interpretative and their validities depend on a "contextualisation" of the research. Initially, we built analytical grids to observe the most common behaviors and observable events. As recommended by Baumard and Ibert (1999), we then conducted interviews to clarify non-observable attitudes on:

- 1- The use of e-mail in the company;
- 2- Users new behaviors (appropriation).

We decided to abandon the first point, i.e. the choice of use, since the majority of users no longer ask themselves whether they should use the technology or not. In this multinational company the answer to the question is obvious.

Observational and analytical grids were, therefore, established to interpret behaviors by simultaneously cross-referencing in matrices the two sources, i.e observation and interview, in order to avoid bias in the conclusions. Then, the data was systematically processed as related in the literature review and validated with the actors. Given the complexity of external communications (private life, correspondents' status, etc.), we studied only internal communications and observed seven behaviors related to basic e-mail functions, i.e. reading one's mail, responding, grouped mailings, carbon copied responses, forwarding, deleting and filing.

### 3.3 Results of the study in immersion

The qualitative study generated results on the frequency of e-mail use and on the new behaviors.

#### 3.3.1 The use of e-mail in the company

The answer to the question about use generally corresponds to the measurement of volume, assessed by frequency and length of use (Deltour and Sprimont, 2002). In order to reveal possible differences in the use of the

tool, we compared the sales team with other company departments by analyzing the total number of in-house exchanged messages.

**Table 1. Number of messages exchanged in-house per day, according to company department**

<i>Department</i>	<i>Sent messages</i>	<i>Received messages</i>
Administration	[5 – 20[	[5 – 20[
Sales	[20 – 35[	[35 – 50[
Marketing/Advertising	[5 – 20[	[20 – 35[

During our research, we noted that the culture of the company encourages electronic communication as a social norm for working and communicating in-house. It appears that sales staff use electronic mail intensively. They send and receive the most messages, compared to other employees in the company (between 35 to 50 messages received per day). The close proximity of individuals does not constitute a barrier to their use of e-mail (We should point out that sales staff work in open-plan offices and can communicate face-to-face). Sales staff say they prefer electronic mail for internal communication in their line of work, as it represents the ideal tool for carrying out everyday tasks (sending estimates, invoices, etc.) and for overcoming the time constraints related to the availability of their colleagues throughout the world. On the other hand, we could observe that senior executives make less use of e-mail (top-down communication). Given their level of responsibility, they prefer face-to-face contact with subordinates. Thus, they organize a weekly meeting to communicate the important statistics. Conversely, for upward communication, we notice easier access to management, which explains the increase in the number of the messages received by product managers and department heads who communicate mainly by face-to-face meetings and by telephone. On the other hand, hierarchical relations are relatively short-lived due to continual changes in the composition of working groups. We should also note that administration often uses paper-

based documents for the contractual tasks required of the company's business (invitations to tender, contracts, etc.). For this purpose they use mainly postal mail and very rarely, the fax machine. Let us now analyze the origin of messages exchanged by sales staff with colleagues outside the sales department.

**Table 2. Analysis of messages exchanged by sales staff, outside their department**

Exchanges	Sent messages	Received messages
With administration	[0-5[	[0-5[
With sales staff	[5-20[	[20-35[
With Marketing/ communication	[0-5[	[5-20[
Others	[0-5[	[5-20[

We will note that these messages originate mainly from sales staff (Table 2). Horizontal communication is thus frequent. This confirms the hypothesis that e-mail is not simply an information and communications tool, but also a tool for collaborating and sharing. It also plays a role in task management (planning, decision-making, etc.). The high number of messages can also be explained by the fact that sales staff play a "connecting role" between the different departments, as it is the only department in direct contact with customers. Sales staff trigger the production chain, upon which the operation of the company depends. The role of sales staff is at the very core of Dell's business. They finalize the sales process and gain customer loyalty. They carry out many and varied tasks which involve collaborating with different departments, such as Finance (for customer solvency), Logistics (for following-up orders), Accounts (for invoices and orders) and they are assisted by several specialists (product managers). Finally, we should note that the number of received messages exceeds the number of sent messages, considering the phenomenon of carbon copied responses.

Thus, thanks to our position of participant observers we worked with different departments (Marketing, Accounts, etc.) and we were assisted by product specialists in

Servers and Storage (Companies) and Software & Peripherals based in different countries: Invoicing (Morocco), Finance (Paris), Production (Ireland). The following table shows the number of sent and received messages according to origin from overseas:

**Table 3. Number of messages exchanged per day by sales staff, according to origin with overseas**

Country	Sent messages	Received messages
France	[5 -20[	[5 -20[
Ireland	[0 - 5[	-
Morocco	[5 - 20[	[20 -35[
Rest of the world	-	[0 - 5[

Sales staff receive more e-mails from Morocco, due to the fact that Morocco handles customer complaints and the quotations prepared by sales staff. The telephone is used from time to time to deal with urgent requests, and indeed, sometimes to confirm that an important e-mail has been received. We can say that geographical dispersion leads actors to use email as a default means of communication in order to overcome spatial constraints, and more particularly, temporal constraints.

Finally, the answer to the question of length of use does not appear to be relevant, which corroborates Deltour and Sprimont's results (2002). As access to the electronic inbox is everybody's business, employees of this company use e-mail both intensively and permanently.

**So, the use of E-mail has become both intensively and permanently.** Sales staff use this tool more than staff in other departments. **Employees have to use e-mail to overcome both the spatial, as well as the temporal constraints of their correspondents.**

### 3.3.2 Results on user's behaviors

How can their perceptions of e-mail modify the behavior of sales staff? How do sales staff actually use e-mail? In order to show these behaviors we have focused on the basic functions of the technology.



### **New behaviors in consulting e-mail: a synchronous medium**

When do they consult their e-mail? Sales staff's days start with checking their inbox: *"the first thing I do in the morning is to switch on my computer and deal with my messages..."* (Sales staff 2). The use of e-mail in this company requires permanent reactivity, in spite of its asynchronous nature: *"...I have to check my mail all day, in case there are any important messages..."* (Sales staff 8).

Indeed, the inbox is checked constantly throughout the working day. We can say that the tool has almost become synchronous, as sales staff interrupt their work on other tasks to deal with new mail in real time. A few days absence from work results in a large backlog of e-mails for sales staff to process.

### **New behaviors in the "reply" function: an individual conversation**

Should I reply to the mail? In this company "to reply" by e-mail seems to be the obvious choice. To choose not to answer one's messages is to opt out of decision-making processes. Thanks to mailing lists<sup>8</sup>, e-mail also allows users to answer one or more people simultaneously and with the same message which represents a considerable time saving for working groups. On the other hand, we can observe that this mode of communication is similar to an individual conversation (an uninterrupted exchange on the same subject). In this case the medium resembles chat<sup>9</sup> and become a means of justifying decisions taken by certain people. *"I send them mails to explain to them..."* (Product manager 1).

Another interesting aspect caught our attention. It became apparent that some

individuals write messages to themselves. According to them, this behavior allows them to keep a trace of information exchanges (documentary evidence). We also noticed that some users systematically include the text of the initial message when they reply, claiming that it avoids misunderstandings.

### **New behaviors in the "grouped send" function: information overload**

To whom should we reply? This question may appear simple, but it conceals, in fact, several problems. In order to send an e-mail to several people, in contrast with other communication tools, the status of the recipient has to be identified through the mailing list in order to be able to address them as a main recipient, a carbon copied recipient, or a blind carbon copied recipient. Therefore, through the perception of the received message, the actor has to choose to reply to either the sender alone, or to all recipients, or to certain recipients only, and with which function<sup>10</sup>. *"Sending mass emails using a mailing list allows us to transmit data at high speed (documents, reports, etc.)"* Sales staff 12.

We noted group mailings (sending to multiple recipients) of the same message to several recipients between employees and sometimes several times (repeat mailings). This "facilitating" feature, which is particular to e-mail, has had a considerable impact on information overload in the company. Indeed, this reply-all function tones down the effect of a message when several people reply to it. Some say that they do not know who wrote what, which proves to be extremely difficult to manage when employees can receive 50 messages per day.

<sup>8</sup> A mailing list is a particular function of e-mail, allowing a user to send information to a large number of other users. In their "intended" use, mailing lists allow, for example, a group of people to communicate by email on a project in progress.

<sup>9</sup> Chat is a form of instant messaging. It differs from e-mail primarily by the fact that conversations occur instantaneously and require the presence of correspondents.

<sup>10</sup> Sending a message while mistaking the "reply" and "reply all" functions or by sending it to the wrong person can have serious consequences for individuals. An employee was dismissed from a company for having mistakenly sent pornographic photographs to his hierarchical superior.

### **New behaviors in the "copy" function: a hierarchical relation**

Whom should we copy in? E-mail allows us to send a copy of the same message to several recipients with two options: CC (carbon copy) or BCC (blind carbon copy). Managers are often copied into messages and assert that this procedure promotes information exchange between colleagues and improves collaboration and coordination within the group. In our view it is a way for managers to keep in constant touch with information flowing between sales staff. This practice also demonstrates the interdependence of tasks: individuals are connected with each other and can be ranked in a hierarchical system as a result of the features of a technology. As far as sales staff are concerned, they say they make use of this practice to include an individual (or individuals) concerned by the subject. In this way, the hierarchical superior, who is often copied into the message, can participate in the exchange at any time.

In fact, carbon copying is a means of covering oneself, a veiled form of querying, where the copied-in respondent is a "witness" to the exchange: *"I copy the manager in, so that he knows that I've replied..."* Sales staff 8.

Thus, an e-mail can be sent which ranks recipients on a hierarchical basis. We can say that carbon copying promotes the creation of a hierarchical relation. For this reason, the mailing list established by network administrators is an indispensable element in spreading information and thus ranking people according to their status in the company's organizational chart. Blind carbon copying is all the more interesting to study. We could not, however, observe this behaviour, nor hear explanations for the exact reasons for making use of this function, due to its concealed nature.

Paradoxically, some employees complain about being copied into messages and others ask to be copied in so as not to remain outside the "loop" of the group: *"I wonder why I am*

*copied in, when I am not actually concerned..."* Sales staff 2;

*"That's why I tell them to copy me in... so that I know how projects are progressing."* Team leader 1;

*"I reply and I often copy myself in, so that I can find my messages..."* Sales staff 3.

Finally, we should point out that the appropriation of messaging leads us to believe, in this case, that it is a tool of transparency.

### **New behaviors in the "delete" function: the role of the "subject" and "sender" fields**

Why do we delete? Recipients can delete their messages by simply clicking on the delete button. We sometimes observe the deletion of unread messages. This behavior is dependent on the two "subject" and "sender" fields: *"If I receive a message from somebody I don't know, I am not bound to read it and even less to reply... when there is an attachment, there's no point, it always contains a virus..."* Product manager 2;

*"When I am not concerned by the message, I put it straight into the trash can..."* Sales staff 23.

According to these statements, recognition of a sender as being undesirable, as well as the subject header of the message, appears to be the main reasons for deleting unread internal messages immediately. It can also be explained by the fact that the recipient is in an unjustifiable "mail chain", or that the user processes information erroneously due to a misperception.

### **New behaviors in the "filing" function: document management**

We should note that individual users are responsible for their own inbox. As the medium is regarded as confidential, an inbox is neither delegated to nor shared with others, for example, a secretary. This contrasts with previous studies where managers rarely used e-mail, as they delegated mail processing to a subordinate. Here, archiving becomes a comprehensive management of files. E-mails are documents like any others which need to be filed in folders and sub-folders in a tree

structure so that information can be found when required.

*"I often go back over my filing system, to see whether I have filed my mails well and to avoid searching for too long..."* Sales staff 30; *"No more tiresome searching for contracts at the bottom of drawers!"* Secretary1;

*"I have two ways of filing my mails: there are those which do not interest me or which I come across without knowing why I kept them and there are those which I keep for a while so that I can use them later, but from time to time I have a clean out and I get rid of all the messages I no longer need..."* Secretary 2;

*"I don't file my mails, I just save them to avoid saturating the network... Sometimes I print them off but I always keep a digital version in my computer..."* Sales staff 15.

Thus, we can note that everybody has their own way of filing their messages, although we often find the same folder headings: suppliers, estimate, friends, etc. In addition, one member of the sales team stated that he reviewed his filing system quite often to speed up information retrieval. There appear, however, to be difficulties in processing data related to information overload. Finally we can note that receiving an e-mail with "attachments" simplifies the task of filing, as the attachment reveals more information<sup>11</sup> about the message's content.

#### **New behaviors in the "forwarding" function: mail chains**

Message forwarding is another feature of email. By transmitting a message and adding a comment (if necessary), the same message will be resent in its turn several times, thus increasing the list of recipients which appears in the mail after each forwarding. Message forwarding can therefore also be a source of "good" or "bad" appropriation. The advantage is that electronic communication by

forwarding appears to be easy. Hence, some individuals receive information which they consider interesting, and are quick to forward it and share it with colleagues. The disadvantage here is that this forwarding list (which is sometimes longer than the information being forwarded) renders the information illegible. *"You get lost in it, you don't know what to read, nor what to do with it..."* Sales staff 3. This disorientation results in staff forwarding the e-mail, which gives rise to what is known as a chain mail. *"This bad habit of forwarding anything and everything... and if it isn't for me, I forward it..."* Sales staff 6;

*"On the other hand, something I can't stand is mail forwarding... it often proves that people don't know what to do with the message"* Sales staff 8.

Poor appropriation thus lies in the fact that some individuals tend to misuse the function and to forward messages, whether "irrelevant" or not, to the wrong recipients. Employees don't pay enough attention to message content. Consequently, they either forward the message or trash it immediately.

We also note that a large number of personal messages are sent in this way, often with an attachment (jokes, hoax, photographs, etc.). Consequently, this unwarranted practice (according to the official line) can result in network saturation and obliges network administrators to send out warning messages requesting users to delete junk messages.

On the other hand, we could not identify a common behavior for the other functions (shared electronic calendar, receipt notices, etc), regardless of the diversity of behaviors. All the same, we can state that e-mail can be an advantage as much as it can be a disadvantage. It facilitates and helps to give structure to an employee's work but it can also represent risks for the business in terms of overload and invasion of privacy.

Finally, by carrying out an in-depth study on the use and appropriation of e-mail in a company, we are able to note that the differences between intended use and actual

<sup>11</sup> An attachment can also contain sound and video which increases the file size. Here we think it is a case of misappropriation, because, instead of putting the files on the Intranet, employees send each other e-mails.

(observed) use highlighted a multitude of practices which can best be described as "misappropriated".

**The facilities offered by e-mail are the source of a multitude of practices which can be described as "misappropriated", involving "good" or "wrong" appropriation.**

#### **4. DISCUSSION AND ANALYSIS**

We are seeking here to adopt a critical analysis of the differences in results between the studies, used as the starting point of our thinking and which we have attempted to expand on in this study.

##### **4.1 Discussion on behaviors**

To state that the perception of information is strongly related to the perception of the medium, of the task to be accomplished and consequently of behavior, is the unexpected result of our study. McLuhan (1964) was one of the first to highlight this importance: "the medium is the message". It asserts that electronics is in the process of overturning the perception we have of the world and thus of our behaviors. Giddens (1987) presents space and time as being dimensions out of which the social system is formed. According to Giddens, there is a formation of practices, through these dimensions (space and time), of regularized models of social relations conceived as reproduced practices, which we can confirm through the observation of behaviors. Likewise, DeSanctis and Poole (1994) stress that the integration of technology must be focused on the processes of its adaptation by the actors of the organization. This adaptation of technology appears to be a key factor in organisational change.

A priori, we are lead to state that there is a partial substitution of electronic communication to traditional face-to-face communication, but this hypothesis was not fully verified amongst sales staff. We note that there are several means of communication

available to employees, the use of e-mail is, however, particularly intensive. The contrasted situations do not enable us to generalize the results on the decision to use of one or another medium. On the other hand, if ICTs reinforce internal communication, the use of e-mail is ahead of the other media in the majority of situations, partially validating the "millefeuille" theory (Kalika & al., 2007).

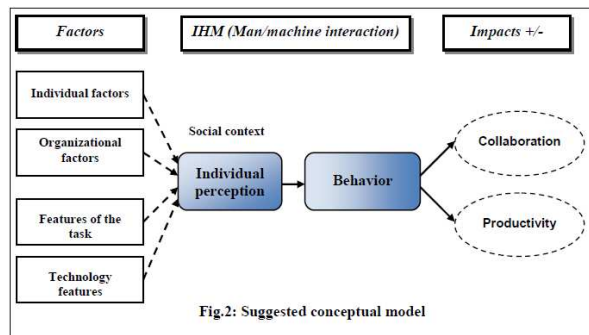
Moreover, the increase in the number of sent and received e-mails poses a whole series of new problems in terms of work productivity (Weber, 2004). We also noted that the use of electronic mail, in spite of its asynchronous nature, requires permanent reactivity in this company. Employees interrupt their work on other tasks to read new mails in real time. Thus we confirm the results of Jackson and al. (2003) and Boukef (2005) on the frequent work interruptions caused by this technology. Furthermore, e-mail is regarded as confidential for management, given that there is neither delegation nor sharing with others, in contrast with previous studies on managers by Kalika and al. (2007).

E-mail promotes the development of hierarchical relations through carbon copying. It acts as a veiled form of querying and a means of covering oneself (Boukef and Charki, 2008). Thanks to message forwarding, information travels more easily, but this process quickly renders information incomprehensible. Similarly, we noted within the company that electronic communication is a means of proof and traceability vis-à-vis other colleagues.

Notwithstanding cost, ease of use, and instantaneousness, e-mail's greatest advantage lies in its capacity to overcome temporal constraints to communication (Tahri and Fallery, 2010). The tool makes information more accessible, cheaper and faster, regardless of collaborators time and space. Paradoxically, it can lead to a lack of productivity through time wasted in dealing with "irrelevant" messages due to a poor appropriation of the "send all", the "carbon copy" and the

"forwarding" functions, which cause information overload and sometimes contribute to increasing employees' stress levels.

After having carried out a review of the different links which appeared in the meta-analysis and in the literature review, we have synthesized all our results into a model (figure 2).



#### 4.2 Implications, limits and perspectives

This paper has focused on emerging perspectives (Reix, 2004) and we have attempted to avoid technological and organisational determinisms. We admit that the empirical results remain modest (the study of one group), but they follow on from the meta-analysis undertaken on twenty empirical studies conducted on the subject between 2000 and 2008 (Tahri and Fallery, 2010).

##### Research implications

The results of previous studies do not explain the complex and unpredictable interactions linked to the constraints of technology, structural factors, and individual rationality and motivation.

This research illustrates the importance of the perception-behavior relation in the context of a multinational company and its impact on collaboration and productivity.

We have made use of a number of theories to construct our model: the task-technology fit theory (Goodhue and Thompson, 1995), the theory of structuration (Giddens, 1987), and the TAM model (Davis, 1989). In the same way, we opted to study actors, i.e. sales staff, who have been rarely documented in the

literature. This study opens the opportunity to researchers to develop and to validate our model on other information and communication technologies and in other types of companies.

##### Practical implications

Our objectives through this study were, firstly, to present a theoretical model of research through a literature review and an in-depth case. Secondly we aimed to get to grips with the complexity of the communication process by understanding the systemic approach and putting forward solutions to the company which hosted this study.

Indeed, this approach enabled us to consider the medium, not as a simple tool for information transmission, but rather as an element of social bonding which connects individuals to each other. This allowed us to highlight the diversity of paradoxical practices and situations of the other studies.

As a conclusion to this study we compiled a charter, in the form of a user's handbook, and set up a half-day training session for new employees with the aim of avoiding dysfunctions and improving collaboration and productivity. Thus, we consider that common standards must be established in order to manage communications effectively. Great benefit can be derived from having a unified approach to communication within the company. The more a company establishes common communication standards for all and connects people by means of standardized processes, the easier it becomes to understand the tasks to be carried out. Furthermore, it becomes easier for the company to distribute tasks to actors and to establish each individual's responsibilities, even if certain colleagues can be less than willing. The idea of implementing a charter emerged from reading Allen D.'s work (2008) on the Getting Things Done (GTD) method<sup>12</sup> (appendix 1).

<sup>12</sup> Describes a method for managing daily priorities. GTD is a personal organization method applicable by any individual to each of his activities, whether

### Limits and perspectives

There are many limits in this study which we need to mention. Firstly, we did not want to influence employees' behaviours. Therefore, to avoid bias in our results, our research was conducted by the participant observation method. Employees were unaware that they were being studied. Their private life was respected in a common agreement with management. Thus, our limits are linked to the interpretativist approach which holds that researchers can never adopt a neutral position and that they are always involved in the subject of the research. We endeavoured to overcome this by triangulating data (internal documents - observation - interviews) and by reflecting the reality in the field without bias. Moreover, the method of qualitative analysis, which was able to determine perception and complexity of the interaction, helped us to describe phenomena which a purely quantitative method would not have allowed us to do.

Another limit is the sample size, which is too small to be generalized to all of the company's actors. These results must therefore be considered with care. It is clear that the model we presented must be subjected to a statistical validation. Validity on a case study opens the application field of the analytical framework to other types of companies and to other technologies.

### 5. CONCLUSION

Can we still trust e-mail? The "Mellisa" and "I love you" viruses surprised the world by the speed with which they spread and blocked millions of e-mail servers. If spam and viruses are scourges which can interfere with our use of e-mail, the most worrying issues for the management of the company we studied

remain, nevertheless, collaboration and productivity.

In this study the aim was not to extol the virtues of ICTs as revolutionary tools, but to understand their roles in changing social interactions through exchange processes. We need to be clear in our analysis of the issues raised by digitalization and deliver practical responses to managers.

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professional or private. Putting the method into practice leads an individual to constantly re-evaluate his priorities, and allows him to act immediately on his top priorities.

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# APPENDIX 1. Getting Things Done (GTD) Method, by David Allen

