

Organizational Consequences Of E-mail Adoption And Diffusion: Theoretical Issues And Empirical Results

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Abstract: The actual use of e-mail communication in organisations presents a lot of surprising figures, and as such it is a far from being a well known technology when considering its social effects. In the field of computer-mediated communication technologies our results confirm Emergent Approaches, and more generally Giddens' structuration theory: the actual use of a technology is context-dependent, and they are embedded in a recursive interaction. Among the many surprising findings, we can mention that: no substitution effects between e-mail and face-to-face have been found, neither any implicit organisation's democratisation; e-mail is more used to communicate with close than distant colleagues; northern people use e-mail in a different way from Southern people. From a methodological standpoint, our research is the most extensive, systematic and complete ever done. However, considering the huge amount of quantitative and qualitative collected data, present results should be regarded just as preliminary ones.

1. Introduction

A typical cognitive bias of technologists is that, once a technology has been developed, it becomes not more interesting, and almost everything is supposed known about that. That bias is even harder in the field of information technology, which changes at such a high rate. The consequence of that bias is very negative, because it overlooks two questions: first, a lot of new things can be discovered concerning a developed technology, as the history of inventions and innovations demonstrates. Thus, being always hard to be sure that a technology is completely known, even pure technologists should pay attention to what is going on to developed technologies. Indeed, the word "developed" would deserve a long discussion, which here is impossible to carry on. Second, technologies are used by human beings, who learn how to use the technology only over time, and in doing so they are usually very peculiar and context-specific. Thus, if the focus of the analysis moves from the

single specific technology by itself to the use of technologies, then over time the interest grows instead of declining, because it is only over time that, if a technology is diffused, it manifests its social effects. And usually what is discovered, as it is also in the present research, is that, regardless of the technical characteristics of the technology, its specific and concrete use is very differentiated and depends largely on social aspects, including in this word also psychological, political, organizational ones.

The human use of technology transcends largely its technical characteristics, setting and addressing very different use and social consequences. The cognitive bias of technologists not only prevents to understand these problems, but even makes them blind respect to the feedback provided by the study of technological use by humans. Indeed, a careful attention to these feedbacks could help to a great extent to improve technological developments and to eventually re-orient them towards more appropriate directions. The scouting that, in order to understand the human side of technology and its potential applications, technologists sometimes do in laboratory setting are definitely not sufficient. They suffer the huge gap between laboratory setting and concrete social setting emerging in the daily life. Laboratory cases cannot be, at least while investigating social issues, even a little proxy of human use in real daily life setting.

E-mail is a type of computer-mediated communication (CMC) which represents the most diffused form of advanced information supports [1], aiding for group decision making and for social communication in organizations. As a technology, it dates back to the first seventies, and therefore can be considered alike “industrial archeology” in the fast changing field of CMC. However, its mass diffusion dates last 10-15 years. Even more, its diffusion as means of communication in organizations, and especially in public administration, is still far to be massive and old. Finally, there are huge differences in the workplace diffusion of e-mail (and CMC in general) across Countries (e.g in Finland more than 95% of organizations allows access to e-mail to the majority of their employees, while in Greece just 40% of them - [1]). It is just with the end of last century that large organizations used extensively this means of communication, replacing other means, or, as we will see in this research, adding this means to the more traditional ones, creating sometimes a sort of reinforcing effects between traditional and new communication media.

While it is widely accepted that CMC are changing the size and forms of organizational structures as well as social and organizational patterns of communication, power distribution and the structure and competencies of internal and external labor markets, it is still debated and unclear why, how, where and when such changes take place [2].

Among the many kinds of CMC, e-mail has been chosen because it is widely diffused in large or hi-tech organizations, but at the same time it belongs to the set of advanced information technologies. Moreover most empirical researches in this field investigate just the impact of e-mail communication systems, and so it allows us to directly compare our findings with those. Basically e-mail communication is contrasted principally to face-to-face and other traditional forms of communication.

Consistently with Markus and Robey [3], we divided the plethora of theoretical CMC approaches into two main groups: the deterministic approaches (Technology Imperative and Organizational Imperative) and the Emergent approaches. The former states that the technological characteristics of e-mail (or CMC) communication influence user behaviors. On the contrary, the Emergent approaches state that all organizational effects of e-mail communication depend on the specific contingent social and organizational context.

The empirical research supporting these approaches has been conducted so far mainly through controlled experiments made on small groups of people. This strategy led to fragmented and often contrasting findings, hardly applicable to real organizational settings.

This heterogeneity of empirical researches left unanswered a number of crucial questions, like the following ones: is e-mail democratizing organizations? Does e-mail

support teamwork, and especially intellectual teamwork? Are e-mail and face-to-face in a substitution relationship or can they produce a mutual reinforcement? How trust formation and maintenance is affected by e-mail adoption and diffusion? How organizational and departmental (group) identification processes are affected by e-mail adoption and diffusion? How does matter for all the previous questions the degree of use of e-mail? To what extent (if any) do contextual variables, like cultural diversity, geographical distance, organizational values, etc., affect all the previous questions?

Our results confirm the Emergent paradigm, with findings depending on the specific context, country, and the many other variables that have been considered. These results can substantially enhance the knowledge new working environments and of future forms of organizations, because both these issues depend on the way that CMC -and in our case specifically the e-mail communication- affect organizational behavior and design.

2. Brief description of the project and methodology

The COMMORG project (“Organizational consequences of e-mail introduction, adoption and diffusion”) was designed just to answer the questions left open from previous researches through a systematic, multi-disciplinary, multi-level cross-country research. Coordinated by Luiss Guido Carli University (Rome, Italy), it involved six other principal investigators distributed between Greece, The Netherlands and the United Kingdom. The project lasted 30 months, developing 16 case studies. At theoretical level, project’s research focused on four main topics: we wanted to investigate whether and to what extent e-mail introduction and use within organizations could impact (i) on the use of other communication media by substituting or integrating them; (ii) on organizational identity and identification and trust relationships building and maintenance among colleagues; (iii) on participation to decision-making among superior, subordinates and colleagues; and (iv) on evolution of genre repertoire in e-mail communication. These topics have been investigated both at theoretical and empirical levels: an extensive literature review has been done and a number of case studies developed. The case studies have investigated three types of organisation that can be broadly defined as international teams, national research institutes and local departments. In order to balance the need of international comparability of results and the variety of organisational forms to include in the study, the research design has been split into two levels. Level 1 study provided a comparison between countries with the same multinational company investigated in each of the four participating Countries, thus providing a descriptive benchmark. In contrast, level 2 studies consisted of more in-depth case studies undertaken in specific Countries with the only constraint of including into the analysis all types of selected organisations per Country.

The company chosen for Level 1 investigation is a large multinational corporation in the business of the production of software for individuals, organizations and public administrations (and its related consultancy), and will be referred to as Isocorp. In this paper we present the main results of the Isocorp case. We have chosen a multinational company in order to undertake a cross country comparisons although ensuring, to a certain extent, control for organizational culture, the level of technological training, access and software. Isocorp is an American corporation with a history of 25 years, that prides itself in being one of the biggest software houses in the world. Obviously, the chosen organization is characterized by having a relatively high use of e-mail. The study was undertaken in four Isocorp subsidiaries located in the United Kingdom, Greece, The Netherlands and Italy.

For the Isocorp case, the research integrated qualitative and quantitative data collection methods in a two-stage case study design. At first stage, we collected organizational documents and conducted in-depth qualitative interviews. All the interviews were based on a common interview guide. Documents were used as a potentially important source of company-relevant data (e.g., statistics of e-mail use, relevant features of

company/department performance, structure etc.), as well as other textual person-based data (e.g. e-mail exchange). In the second phase, we collected quantitative data through an online structured questionnaire. These three collection methods enabled different types of data to be collected in order that specific research questions could be addressed.

In the process of research tools development, we tried to stimulate the inputs and interests of the end-users (the companies and their employees) in two main ways: 1) by consultation with key contact people in the studied organization, and 2) by more formal piloting of the research tools on representative personnel in the companies involved. The aim was to address the end-user priorities in order to maximize the utility of implications of this research for the business context with respect to possible fallouts in terms of best practice of e-mail use, increase communication efficiency, and help companies evaluate e-mail usage in comparison with other communications.

At the end of the fieldwork we collected a total of 36 in-depth interviews: 9 in Isocorp Greece, 7 in Isocorp UK, 11 in Isocorp Italy and 9 in Isocorp Netherlands. All interviews have been verbatim transcribed, translated into English, where necessary. In terms of the online survey, we had 623 respondents that took part and completed the questionnaire: 271 of them were from the Netherlands, 206 from Italy, 113 from the UK and 33 from Greece. The analysis and interpretation of this huge mass of data is still ongoing, anyway we can already highlight the main relevant issues that emerged from the analysis carried out so far.

3. Research findings and discussion

3.1 E-mail use and media mix configuration

E-mail is heavily diffused in Isocorp as the most part of the respondents receives more than 25 e-mails in a typical working day. The Country where e-mail use, in terms of number of e-mail received and frequency of e-mail check, is more intensive is the UK. Data also show that e-mail communication in Isocorp is used mainly to communicate with people that respondents see often face-to-face because, for instance, they work in the same department. This finding contrasts deterministic approaches that expect e-mail to be used mainly when physical proximity is low.

As it concerns reasons for media selection and use, it emerged that verbal communication (face-to-face and telephone) is on average perceived as most effective with respect to e-mail to ensure clear accountability and distribution of responsibility, to avoid misunderstandings and to express criticism and/or disagreement. Furthermore verbal communication is perceived to be less ambiguous than e-mail. However, with respect to this latter issue, there are some differences among the four Countries: in Mediterranean Countries (Italy and Greece) verbal communication is considered more ambiguous than e-mail and it hinders a clear distribution of responsibilities. Contrarily in the UK e-mail communication is considered to be more adapt to generate misunderstandings and to avoid responsibilities.

When analysing the composition of the media mix, we discovered that, in Isocorp, e-mail is the communication medium most frequently used in all the four Countries, followed by fixed phone, mobile phone and face-to-face with almost the same rate of diffusion. Only in Italy and Greece there is still a small percentage of fax and “on paper” communication.

Even if the qualitative composition of the media mix is almost the same across Countries, there are some slight differences in the quantitative composition of the mix: in Italy, for instance, mobile phone communication is more diffused than face-to-face whereas in all the other Countries is the opposite.

In order to check the effect of e-mail use with respect to frequency of use of the other media, we split our sample in two groups: heavy e-mail users (more than 60% of daily communication is made by e-mail; N=153) and light e-mail users (less than 40% of daily communication is made by e-mail; N=274). We then separately analysed the composition of the media mix for these groups and by country. General frequency distribution shows that heavy e-mail users are also heavy communicators: they use all the other media more than light users do. Another interesting issue is that for light users across Countries the most diffused medium is face-to-face communication, whereas heavy users communicate a lot via phone (mainly fixed). It is relevant to note that there is no substitution effect (i.e. face-to-face decreases as e-mail use increases). Absolute figures for face-to-face communication don't change between heavy and light users, but the figures for fixed phone increases a lot when considering heavy e-mail users. Findings suggest that e-mail introduction led to a general enlargement of communication media in the organisation. It has integrated the use of almost all media, notably mobile and fixed phone. No substitution nor enlargement effects are reported with respect to face-to-face communication.

At Country level, respondents in UK and The Netherlands reported a media mix composed by few means: face-to-face, fixed phone and mobile phone. In the UK heavy users prefer phone (fixed first, then mobile) and light users communicate less than heavy ones and primarily via face-to-face and fixed phone. In The Netherlands, heavy users prefer fixed phone then face-to-face and mobile while light users prefers face-to-face communication before the phone.

In Italy and Greece the composition of the media mix is more articulated. Greek heavy users reported the following ranking of more used communication media: 1. fixed phone; 2. face-to-face; 3. mobile phone and fax; 4. letter. None uses SMS for work related communications. The ranking changes for Greek light users: 1. face-to-face; 2. fixed and mobile phone.

In Italy, heavy users strongly prefer phone communication (mobile and then fixed), followed by face-to-face, SMS and fax. Italian light users also reported an high diffusion of mobile phone, then face-to-face, fixed phone, SMS and fax.

These data show that there is not a substitution effect between e-mail and other media but a reinforcing one instead: heavy e-mail users indeed are generally heavier communicators than light users, and physical proximity with face-to-face communication, increases e-mail use. Moreover, in the composition of the media mix, the cultural variable assumes a relevant role. Southern Countries prefer to rely upon written agreements and division of responsibilities because they think that written communication is less ambiguous whereas Northern Countries prefer verbal communication. These attitudes are reflected in the composition of the media mix: both heavy and light users of e-mail in Northern Countries use a lot of verbal communication, but in Italy and Greece also written media compose the mix. These data also confirm the high diffusion of mobile communication in Italy with respect to the other 3 Countries: mobile phones are at the top of the list for Italian heavy and light e-mail users and they are the only ones that use SMS for work related communications.

3.2 Identity, trust and e-mail use

One of the issues explored in recent studies refers to the problem of identity multiplicity. Scholars acknowledge that organisations are likely to develop multiple identities. Recent studies try to understand what are the organisational factors which facilitate/limit the likelihood to develop multiple identities, what are the potential costs and benefits, and what are the potential strategies to manage multiple identities.

Although there were some inter-country differences in the level of identification among the four Isocorp subsidiaries investigated, interestingly our findings show that in all the four sites the identification with the department was on average higher than the identification with the organisation

Furthermore, the data showed that departmental identification appeared to be stronger than organisational identification, especially when the latter was perceived as 'arrogant' 'aggressive' and 'customer unfriendly' which was the case more so in Italy and UK. In this respect, the likelihood of developing multiple identities (organisational, departmental etc.) depended on the employee's perception and lived experience of the corporate and departmental identity and image. We also looked for any differences in identification and trust levels among heavy and light e-mail users across different Countries, but data showed that this classification of users doesn't impact on the degree of identification and on the trustworthiness of organisational members. This result is consistent in all the four Countries. We then tried to go more in depth and to investigate the identity and trust issues through qualitative data.

When asked how they identify with the organisation or to describe the corporate image, most interviewees interpreted the corporate culture was as a very 'dynamic' 'aggressive' 'competitive' environment. For many the profit and sales orientation of the company was an everyday work experience. As one of our Italian respondents put it: 'It is the way we work daily.' The negative and aggressive character of the company was mentioned more by the British and Italian employees in comparison to the Greek and Dutch ones who seemed to be more 'at ease' with the corporate identity. More specifically most of the Greek respondents expressed their satisfaction working in Isocorp.

This was in contrast with the UK respondents that complained about the competitive and customer-unfriendly character of the company. Respondents from all four countries mentioned that the focus of the company was on profit and sales. This created further competition among the Isocorp employees, who worked to achieve their own individual targets, and reflected on a loose management where, as a UK Director put it: «individuals tend to get left to their own devices».

Interestingly, this competitive and aggressive culture appeared to have some important implications for the communication patterns, and more specifically e-mail usage within the company. People tended to rely too much on e-mail in order to structure their day-to-day work. Moreover, because of the untrustworthy environment people tended to keep their e-mails as records of agreements.

3.3 E-mail and Participation in Decision Making

Most of the literature on the effects of CMC on organizational participation has focused on the supposed increase of democracy in the relationships between superiors and subordinates as a consequence of CMC technologies' adoption. Participation in Decision Making (PDM), that is the extent to which decisions are taken jointly among superiors and subordinates, would increase because status differences are not perceived through e-mail. According to Technology Imperative approaches, status differences are attenuated when people communicate via e-mail. Social cues are reduced and people tend to communicate freely and without inhibitions.

However, from both the interview and questionnaire data, it is clear that in Isocorp status differences are still apparent when communicating via e-mail. Status can often be gleaned from an e-mail signature or even the e-mail address of an individual. Furthermore, within an organization, the status structure is inherent within all work practices and so will unlikely be undermined by e-mail. Indeed, although high status respondents reported that they were

more aware of status in face to face communication, low status respondents did not report this distinction between e-mail and face to face communication.

People, by e-mail, are therefore still able to perceive status differences and behave accordingly. In the interviews, whenever the contextual climate was perceived supporting PDM, e-mail was used to bypass hierarchy and to participate in the decision processes. Vice-versa, when the context was perceived more hierarchical, and status differences did count, e-mails with superiors tended to respect the existing hierarchical relationship.

The perception of status differences via e-mail causes an unbalance in the importance of an incoming e-mail messages. Several respondents report that the attention paid to incoming e-mails depends actually on the status of the sender or of the people involved in that message (the addresses in the "To" and "Cc" fields). This is in contrast with a "real" PDM where all proposals and ideas should be weighted on the basis of their relevance and not of the status of the proponents.

Another democratizing effect e-mail is supposed to have, according to Technological Imperative, is the reduction of hierarchical distances through direct one-to-one or one-to-many communication. Top managers and (hierarchically) distant others, in other words, would be more reachable by lower status members, who would be able to by-pass traditional hierarchical paths of communication. Respondents who show to be respectful of the hierarchy, however, report that this is not true.

National culture resulted to be another important contextual factor for ePDM (PDM via e-mail). Results show that Mediterranean Countries (Greece and Italy) present higher levels of ePDM than Northern Countries (United Kingdom and The Netherlands). This result can be explained in different ways. First, as explained talking about substitution, people belonging to subsidiaries localized in Northern Countries tend to perceive e-mail communication as more ambiguous and more likely to cause misunderstandings and less clear accountability than verbal communication. The opposite results occur in the Mediterranean Countries. As Emergent Approaches argue, these perceptions of the medium affect its actual use. PDM cannot occur through media which are considered not able to support the communication that PDM requires. However, the "richness" or "leanness" of a medium are not objective features intrinsically present in the medium but socially constructed perceptions. Interviews confirm that in Mediterranean Countries e-mail is appreciated for it allows to keep record of communications.

Another explanation of the difference in ePDM results among Northern and Southern subsidiaries resides in the perception of the organizational climate that affects PDM. Results show that in Northern Countries (especially UK) people tend to consider their direct superiors as more autocratic and less participative than people in Southern Countries. In a context where PDM is not practiced by the direct supervisors, PDM is less likely to occur even via e-mail.

Eventually ePDM scores higher values in the Countries where e-mail communication, as a percentage, is used more than other media, that is Italy and Greece. Consistently, in Italy heavy users of e-mail are much more keen in using e-mail for PDM than light users. In the other Countries there is no evidence of this effect.

Hofstede model [4] of cultural influence on organizations is partly disconfirmed. His model predicts that higher levels of PDM should occur in Northern Countries, where power distance and uncertainty avoidance are fewer than in Mediterranean Countries. Our study found the opposite: direct superiors are considered more autocratic in Northern Countries, and consequently ePDM occur more in Southern Countries. However, as Hofstede predicts, members of Mediterranean Countries show more appreciation of written communication by e-mail because of its ability to reduce uncertainty and ambiguity.

In general, therefore, both questionnaire and interview data support the Emergent Approaches which claim that contextual factors (existing off-line PDM, leadership styles,

perception and importance of status differences, national culture) and perceptions of the features of the medium (not its “objective” features), influence the actual use of e-mail for participatory purposes.

4. Conclusions

This study represents a first look at the enormous amount of data resulting from the Commorg project. The preliminary analyses of this dataset revealed the following results:

- E-mail features are not objective and steady but are activated and socially interpreted. In this sense, for example, the differences in perceiving e-mail features and results across Countries.
- E-mail does not substitute other media but at the opposite reinforces the use of a media mix that can vary according to the organizational context.
- E-mail potentially can connect people across organizational and geographical boundaries, but the reality is that it connects people who have existing relationships. In this sense, results suggest that physical proximity with daily face-to-face increases the likelihood of e-mail exchange.
- E-mail use, despite arguments from Technological Imperative, could be a proxy of lack of trust instead of increase of it. E-mail possibility to store and re-use messages actually can be viewed as a good means to avoid opportunistic behaviors in contexts where these frequently occur.
- E-mail is a catalyst for PDM in the sense that its participatory use is encouraged in participatory environments and vice-versa. E-mail abstract possibility to by-pass hierarchy does not mean actual use of e-mail in this way.

In conclusions our study confirms Emergent Approaches where contextual variables are taken into account and the technology is seen as a socially constructed artefact. Technological Imperative, at the opposite, is rejected.

A merit of our research is just to give empirical data, while most literature on the effects of CMC on human or organizational behaviour is based almost exclusively on laboratory case studies. They usually are rather limited in their explanatory power, because, beyond the limits of all laboratory case studies, they use few people, who are chosen generally among university students. In the COMMORG project, on the contrary, almost all data come from empirical fieldwork, and only marginally and complementary from laboratory cases. These advantages allow now to draw many robust findings and conclusions from our research, constituting a significant test to corroborate or refute current theories.

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