

# A typology of media users in a multinational corporation

## A cross-country multi-methodological study

Lucio Biggiero

University of L'Aquila, Piazza del Santuario 19, Roio Poggio, 67040, Italy  
Tel: +39 0862 434880, Fax: + 39 0862 484842, E-mail: [biggiero@ec.univaq.it](mailto:biggiero@ec.univaq.it), [lbiggier@luiss.it](mailto:lbiggier@luiss.it)  
Knownetlab Research Center, [www.knownetlab.it](http://www.knownetlab.it)

### Abstract

Due to the contemporary action of a number of variables, large organizations can be hardly considered communities of similar types of media users. Likely, they are populated by different groups, which mix in different ways within and between departments, functions and groups. The identification of the types and characteristics of media users is vital for effective internal and external communication. Among three European subsidiaries of a large American corporation three groups have been evidenced, and depicted as characterized by traditional, computer-mediated, and multi-media users. They present quite marked differences in terms of actual communication means, gender, age, and education level. It emerged that email use intensity is a good proxy to identify the types, because traditional media users are totally uncorrelated with this index, while the other two groups are positively correlated and associate with it growing from multi-media to CMC. These latter can also be identified by looking at the number of work related emails.

**Keywords:** computer-mediated communication, email communication, face-to-face communication, media users.

**JEL code:** M150.

### 1. Introduction

A vast literature shows the crucial role played by organizational communication in almost every department or function (Dolphin, 2003; Frank and Bronwell, 1989; Fulk and DeSanctis, 1999; Heath, 1994; Johnston *et al.*, 2007). While organizational reputation and strategic marketing were long considered as the elective fields of organizational communication, only relatively recently internal communication is attracting growing interest for management scholars and practitioners (Gordon, 1998). De Bussy *et al.* (2003) discuss the relationship between stakeholder theory and internal marketing communication, Dortok (2006) shows the interaction between internal communication and corporate reputation, Goodman and Truss (2004) and Harkness (2000) evidence how strategies of communication affect the achievement and implementation of successful major organizational change, Lievens *et al.* (1999) links internal and external communication to the commercial success of financial service innovations, Smidts *et al.* (2001) relates to organizational identification, Argenti (1998) and Dolphin (2005) to strategic management, and so on. Indeed, to the extent that knowledge management and human capital become crucial competitive factors it is necessary that people communicate in the best way at departmental, organizational and inter-organizational level.

In order to implement the right means and to facilitate communication it is necessary to know the attitudes of organizational members towards the use of media (Goodman and Truss, 2004). In fact, since any communication is made of content, form and channel (medium), failing to use the right media could vanish any managerial actions and damage organizational performance (Clampitt and Downs, 1993; Johnson *et al.*, 2007; Pettit *et al.*, 1997; Pincus, 1986; Putti *et al.*, 1990; Varona, 1996). The question does not concern just the circulation of knowledge or information or data, but even the social-psychological aspects that mediate and even orient human communication, like trust, formal and informal norms, identification processes, citizenship behaviors, etc. All these aspects are shaped and channeled to more or large extent by communication media, and through (formal and informal) reciprocal interactions between technological and social factors they orient the choice and use of communication media (Goodman and Truss, 2004; Kitchen and Daly, 2002; Klein, 1996; Pitt *et al.*, 2001).

Therefore it is of primary importance for management to know whether a typology of media users can be identified in each specific organization. It would substantially help fine tuning communication devices and improving fitness among media users. Previous studies (Fulk and Boyd, 1991; Klebe Treviño *et al.*, 2000; Kiesler *et al.*, 1984; Sproull and Kiesler, 1991) suggest that the choice of media depends on a number of factors, among which task complexity, that is the content about which communicating, users' age, gender, nationality, organizational and national culture and values, and many others. In this paper it is dealt with most of these issues, excepted that of task complexity and some others.

The extant literature on the relative advantages of new vs. traditional media has not yet reached a shared and clear conclusion. Neither technological, like media characteristics theories (Daft and Lengel, 1984, 1986, 1988; Daft and Macintosh, 1982; Daft *et al.*, 1987; Sproull and Kiesler, 1991) and social information processing (Walther, 1992, 1995, 1996; Walther and Tidwell, 1995) nor organizational imperative perspectives, like social identity theory (Spears and Lea, 1994) and group communication dynamics (McGrath, 1991), demonstrated to be lack of counter-examples. On the other side, structuration (Contractor *et al.*, 1996; Contractor and Seibold, 1993; Markus, 1994a, 1994b; Markus and Robey, 1988; Zack and McKenney, 1995) and social (Cecez-Kecmanovic *et al.*, 1999; Orlikowski *et al.*, 1995; Yates and Orlikowski, 1992; Yates *et al.*, 1999) constructivist theories, which are characterized by leaving a number of variables interacting each other without a precise order and clear mathematical relationships among them, prevent any possibility of univocally or plausibly explain real cases and predict future behaviors. In fact, the current state of these theorizations allows to justify any outcome, and therefore it is substantially useless. The mirror of this large number of rival theories is that empirical studies rarely converge to the same conclusions. Though many (not all) find marked preferences for face-to-face verbal communication vs. all other media in most circumstances (Goodman and Truss, 2004), sharp contrasts are among the latter, and quite uncertain appears the relationship between preferences, actual and effective use, as that between single and collective media choice.

The specificity of the present contribution is to search for and identify the characteristics of groups of media users within a large multinational corporation. The main distinguishing point behind this study is the idea that organizations are not homogeneous in social-psychological and technological terms among departments, functions, workgroups and subsidiaries. Regardless of the theoretical perspective, if this assumption is true, in order to design, choose and manage communication media it becomes important to search and identify the characteristics of the main groups of media users. A medium that is appropriate for a group could be not so for another one.

Of course it should be distinguished between desired, actual and effective communication means (Davis, 1989), and as Burke and Chidambaran (1999) and Klebe Treviño *et al.* (2000) demonstrated, these three aspects can substantially differ within the same organization. Of course they differ also between organizations, because communication is context specific (Bates *et al.*, 1996; Balogun and Hope-Hailey, 2003; Black and Porter, 1991; Kedia and Bhagat, 1988; Straub, 1994; Tan *et al.*, 1988). As for the present study, interviewees are asked to answer about the actual use, which departs from the desired use because of eventual organizational constraints, the action of critical mass effects, past experience, and the dynamics of workgroups. For these reasons, in order to design, choose and manage communication media it would be ideal to have all these information about media users.

The paper is structured as follows. Firstly, it is wondered whether, regardless of gender, age, education degree or nationality, there is a typology of media users in a cross-national dataset composed by the members of the European subsidiaries of Isocorp, an American multinational corporation, leader in the field of software for business. Since the answer revealed positive, then the analysis has been deeply run to understand whether and how those variables affect the discovered typology. Implications for the academic and managerial debate have been set up and discussed.

## 2. Research hypotheses

A first research hypothesis refers to the existence of a typology of media users, who employ in a specific and eventually combined way different media. Thus, it is possible to formulate the following:

*Hypothesis 1:* In large organizations it is possible to identify a typology of media users, who employ different media in a specific or eventually combined way.

According to some statistical indicators, UK is much more digitalized than Italy, and The Netherlands would be in the middle. If this difference were reproduced at organizational level, and if there were different types of media users, we had to find that workers more oriented towards traditional media covers a larger share in the Italian subsidiary, and those more oriented towards computer-mediated communication covers a larger share in the British subsidiary. This suggests the following:

*Hypothesis 1.a:* differences among media user types are mostly accentuated between Italy and Great Britain.

If the nature of the communication medium does really matter and if traditional and new media are still perceived and used very differently (), then we should expect that the typology evidences at least two poles: one is oriented to use computer-mediated communication devices, like internet and email, and the other more traditional means, like face-to-face, fixed or mobile phone, fax, etc. Consequently, it is set up the following:

*Hypothesis 2:* If there exist a typology of media users, it should contain at least two types with rather differentiated media mix: one oriented towards computer-mediated and the other towards traditional devices.

If face-to-face communication is really perceived as radically different from computer-mediated communication and if there is a specificity related to job complexity or hierarchical position, these two means should mark different types of users or at least should be present in a very different proportion in the composition of media mix of each user type. In testing this hypothesis of a juxtaposition between face-to-face (F2F) and computer-mediated communication (CMC), it is not implicitly assumed that one of the two were better, but just that they are perceived as traits salient to different communicating behaviors, and thus building diverse types of users. This leads to the following:

*Hypothesis 3:* If there exist a typology of media users, F2F and CMC should be almost mutually exclusive, that is they should be reversely concentrated in different user types.

About users' characteristics it is possible to raise several hypotheses, according to many cues from sociological and organizational literature. Digital divide suggests that a user type characterized by CMC should be much younger than one characterized by traditional means, while a mixed group should be in an intermediate point. In fact, young people are everywhere more familiar and versatile in using computer devices, and therefore it should be expected that CMC means, like email or internet, are more diffused and used more intensively by young workers. Depending on how much accentuate is the digital divide, MMU is supposed to be in the middle between CMCU and TMU. However, considering that Isocorp is a young company, because almost  $\frac{3}{4}$  of employees fall in the class under 41 years old (tab. 10), it is likely that such differences were not so sharp than what could be find elsewhere, and especially in old organizations and in public administration. This leads to the following:

*Hypothesis 4a: CMCU are younger than TMU, and eventually MMU are in the middle between the two groups.*

It is hard to formulate hypotheses concerning gender between these three groups, but some cues come from the fact that in value added service companies, those who intensively work in computer-related tasks cover relatively lower hierarchical positions than others. Moreover, though with a different degree for each country, there is a gender divide in organizational hierarchies, which sees women at lower positions than men. Thus, we could expect that TMU are mostly males, CMCU females, and MMU balanced between the two. However, we should again take into account that Isocorp is a young software leading company, and therefore such hierarchical and gender differences are not so sharp than what could be found elsewhere, and especially in old organizations and in public administration. This would suggest that gender differences, if any, were not so pronounced among the three user types. Hence it could be raised the following:

*Hypothesis 4b: Gender differences between the three groups are not very significant, excepted for contrasting CMCU and TMU.*

The abovementioned implicit hypothesis that computer-based tasks are used more intensively at lower hierarchical positions can suggest us that highest education levels should be found not in CMCU, but rather in TMU, with the usual middle position of MMU. However, still in this case we should keep in mind the moderating role played by the nature of young and computer technology of Isocorp. Bearing this in mind we can advance the following:

*Hypothesis 4c: Highest levels of education concern TMU, followed by MMU, and finally by CMCU.*

Plausibly, email communication is associated with other aspects of email: the number of received email and the frequency in reading email. If this were the case, then it could be possible to extract a linear component, able to synthesize all the three variables, which would become an index of email use intensity. Then it is reasonable to suppose that:

*Hypothesis 5: The percentage of email communication spent at work is proportionate with the number and the frequency of emails received.*

We could wonder whether observing the sole email use intensity could address to some typology and discriminate between different user types. This eventuality could be very helpful for future studies, because it could save a lot of efforts in gathering and analyzing data. Given that email is becoming a “mature” means, it is plausible to formulate the following:

*Hypothesis 6: Email use intensity is a significant proxy of user type.*

### **3. Dataset and methodology**

Dataset was gathered within an European research project called COMMORG project (“Organizational consequences of e-mail introduction, adoption and diffusion”), which was designed just to answer some basic questions left open from previous researches through a systematic, multi-disciplinary, multi-level cross-country research<sup>1</sup>. Hence, the data used for this

---

<sup>1</sup> The project lasted 30 months between 2000 and 2003, and involved six academic research groups distributed in Italy, Greece, The Netherlands and the United Kingdom. It was focused on understanding: (i) workers’ media mix and actual use; ii) the effects of email use on organizational identity and identification and trust relationships among colleagues;

paper are only a small part of a much larger dataset related to an online survey of 36 questions, with a number of sub-questions.

Data refer to Isocorp, a large multinational corporation in the business of the production of software for individuals, organizations and public administrations (and its related consultancy)<sup>2</sup>. Its presence in many countries allowed to undertake a cross country comparison although ensuring, to a certain extent, control for organizational culture, and 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, and therefore it is characterized by having a relatively high use of CMC means. This trait should be taken into account, because it is likely that in low-tech or more traditional companies the findings related to personnel age, gender balance, and education level could significantly change. The study was undertaken in four Isocorp subsidiaries located in the United Kingdom, Greece, The Netherlands and Italy, but due to statistical problems Greece data have not been included<sup>3</sup>.

The 590 respondents are distributed as follows: 271 of them were from the Netherlands, 206 from Italy, and 113 from the UK. However, total valid cases for the present analysis are only 421, because missing 29 in UK, 86 in The Netherlands, and 54 in Italy.

In order to search for a typology of media user the following question was asked:

1) What percentage of your communication at work is spent using the following media<sup>4</sup>?

	0-20%	21-40%	41-60%	61-80%	81-100%
F2F meeting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-mail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Phone calls, fixed line	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Phone calls, mobile	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SMS/telephone text messaging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fax	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Letter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet/video/web cam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A special focus on email use has been realized in order to investigate its intensive use, and also to check consistency with the previous question. The eventual possibility to build an index of email use intensity could allow testing the fifth hypothesis. Hence, the two following questions have been used:

2) Approximately how many e-mails do you receive on a typical work day?

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	>40
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3) How often do you read your e-mail (tick the one that applies most often)?

Monthly     Weekly     Daily     Hourly

In the following analysis it has been used multi-dimensional and multivariate statistics, because events are often non-independent, variables are discrete and reflects only ordinality and not

iii) email participation to decision-making among superior, subordinates and colleagues; and vi) genre repertoire in email communication.

<sup>2</sup> Within the same research project other quantitative and qualitative data have been collected at national and international level, but here only Isocorp data are used.

<sup>3</sup> These data are less than one third of those related to the other three countries, and moreover they are disturbed by a number of outliers.

<sup>4</sup> Note that the sum does not have to add up to 100%, as there might be overlap.

cardinality of phenomena, and finally because there is no any presupposition of normal distribution of events.

#### 4. Main results

A principal component analysis including all communication media with its corresponding pattern of use intensity evidences (tab. 1) that the early three factors do explain around 55% of cumulative variance. They represent the following mix of communication media (tab. 2): 1) email, internet, and fixed phone; 2) mobile phone, F2F, and sms; 3) letter and fax. Hence, the first one coincides with computer-mediated and the other two with traditional media.

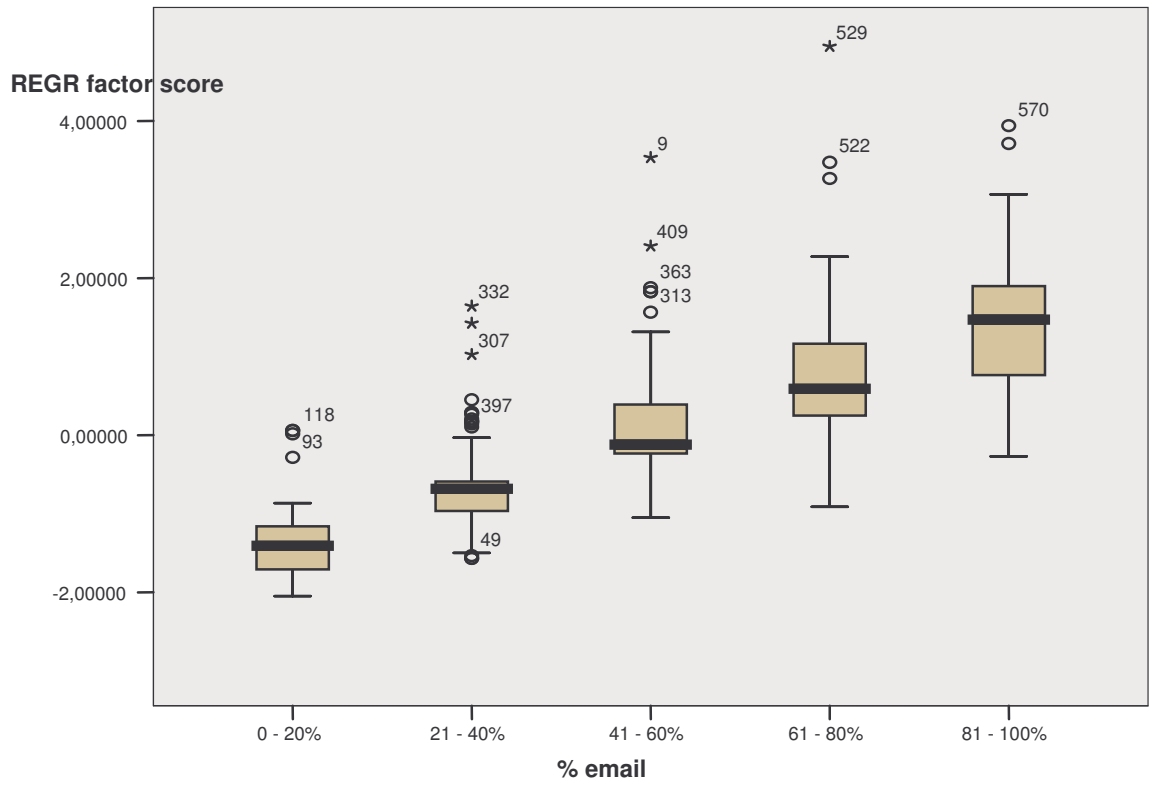
Total Variance Explained			
Component	Initial Eigenvalues		Cumulative % of variance
	Total	% of Variance	
1	2.089	26.108	26.108
2	1.196	14.957	41.065
3	1.095	13.686	54.752
4	0.991	12.392	67.144
5	0.770	9.626	76.771
6	0.674	8.429	85.201
7	0.600	7.497	92.698
8	0.584	7.302	100

The first factor discriminates effectively groups characterized by different intensity in email communication (tab. 2 and figures 1a, 1b and 1c). Moreover, this latter marks strongly (72%) the first factor, which includes also internet communication with almost the same contribution (70%), and fixed phone with a minor contribution (54%). Conversely, it gives only a light contribution to explain variance of the second and third factor. The second factor is characterized by mobile phone (72%) and F2F (70%), followed by sms communication (59%). Finally, the variance of the third factor, which is characterized by the use of traditional media, is dominated by letter (83%) and fax (72%) communication.

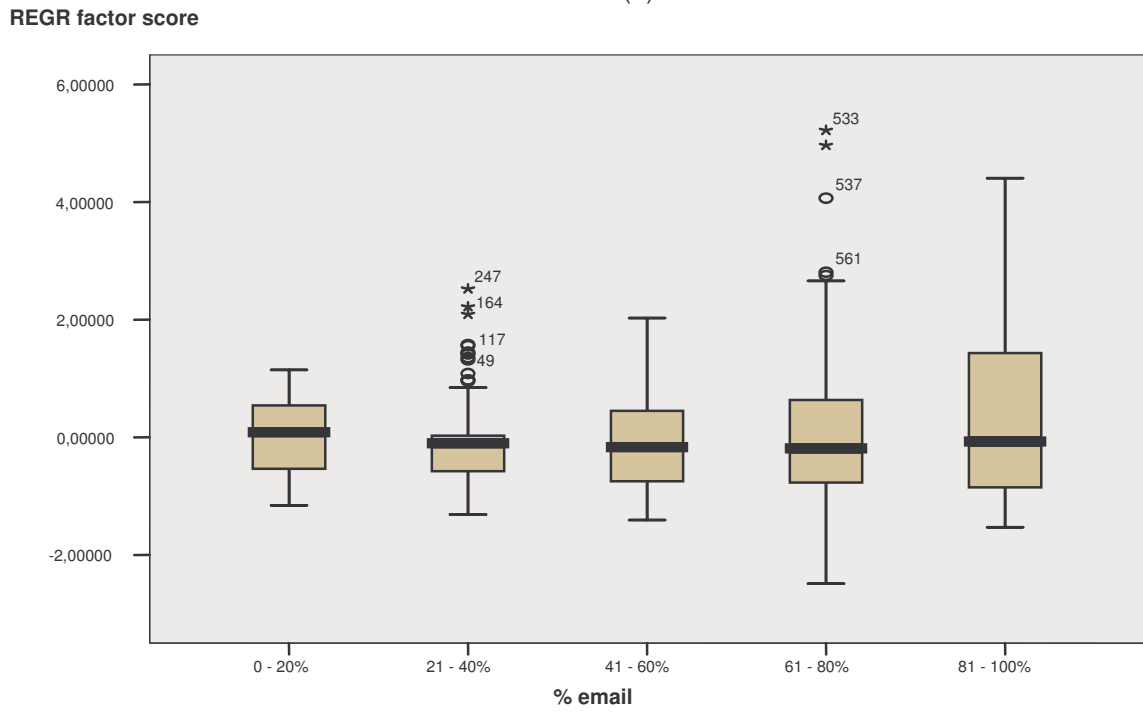
Communication media	Extracted factors		
	1	2	3
% email	0.721	0.089	0.188
% internet	0.704	0.000	-0.158
% fixed line phone	0.540	0.170	0.383
% SMS	0.234	0.591	0.075
% mobile phone	0.200	0.721	0.139
% fax	0.168	0.202	0.718
% letter	-0.050	-0.081	0.830
% F2F	-0.250	0.699	-0.061

Fig. 1 Relationships between email communication and factors

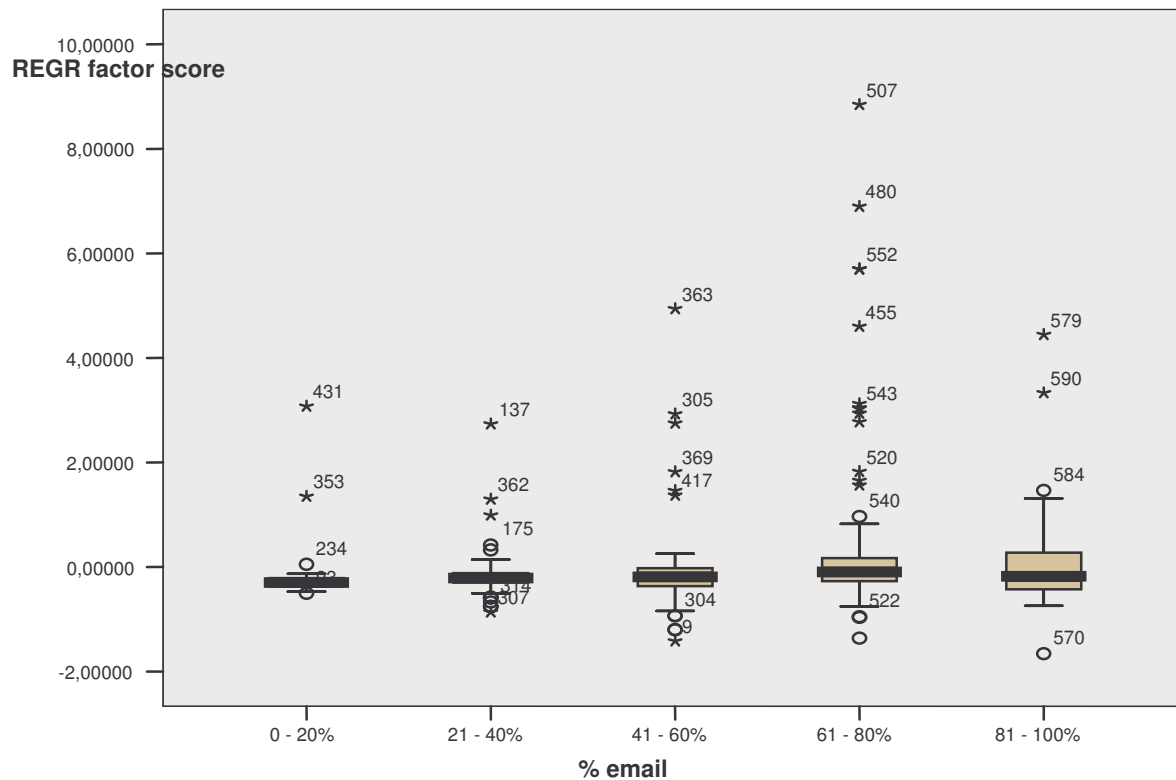
(a)



(b)



(c)



Then a cluster analysis on the data resulted from the principal component analysis has been applied. Here a satisfying typology did emerge, showing the existence of three clusters, to which correspond three types of media users. The first type, that we can call CMCU (CMC users), is compound by a mix of email, internet and fixed phone; the second one, that we can call MMU (multi-media users), is compound by mobile phone, internet, sms, fax, and email; and the third one, that we can call TMU (traditional-media users), is compound by F2F, fax, letter, and fixed phone. The distribution of the three types among respondents shows that TMU covers almost 53%, while the other two share the remaining part nearly equally (tab. 3 and fig. 2).

Tab. 3	Distribution of user types			
	Frequency	Percentage	Valid percentage	Cumulated percentage
CMCU	104	17.6	24.7	24.7
MMU	95	16.1	22.6	47.3
TMU	222	37.6	52.7	100
Total	421	71.4	100	
Missing data	169	28.6		
Total	590	100		

These results confirm the first two hypotheses, because they demonstrate that there exist a typology of three media users, and that two out of the three types show opposite behaviors

concerning communication media usage: one (CMCU) is oriented towards computer-mediated and the other (TMU) towards traditional devices. Moreover, these data confirm also the third hypotheses, because in these two types computer-mediated media and F2F are mutually exclusive. This is particularly true as concerning F2F, because TMU users do explain 52.7% of variance.

F2F is used rarely by CMCU, while rather extensively by MMU and TMU (tab. 4). Email is used extensively by CMCU and MMU, while residually by TMU (tab. 5). Fixed line phone is rather balanced among the three clusters, with a slightly more presence in CMCU and MMU (tab. 6). Mobile phone markedly characterizes MMU, while it is marginal for the other two clusters (tab. 7). All the other communication means have almost no any characterization of clusters, because they are marginal in all of them.

Tab. 4		F2F by user type					
		% F2F communication					Total
User type		0 - 20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%	
CMCU	number	80	23	1	0	0	104
	% within user type	76.92	22.12	0.96	0	0	100
MMU	number	10	38	37	7	3	95
	% within user type	10.53	40	38.95	7.37	3.16	100
TMU	number	36	111	58	15	2	222
	% within user type	16.22	50	26.13	6.76	0.90	100
Total	number	126	172	96	22	5	421
	% within user type	29.93	40.86	22.80	5.23	1.19	100

Tab. 5		Email by user type					
		% email communication					Total
User type		0 - 20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%	
CMCU	number	0	7	47	39	11	104
	% within user type	0	6.73	45.19	37.5	10.58	100
MMU	number	4	8	30	41	12	95
	% within user type	4.21	8.42	31.58	43.16	12.63	100
TMU	number	22	122	63	13	2	222
	% within user type	9.90	54.95	28.38	5.86	0.90	100
Total	number	26	137	140	93	25	421
	% within user type	6.18	32.54	33.25	22.09	5.94	100

		% fixed line phone communication					Total
User type		0 - 20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%	
CMCU	number	28	37	28	8	3	104
	% within user type	26.92	35.58	26.92	7.69	2.88	100
MMU	number	27	32	22	9	5	95
	% within user type	28.42	33.68	23.16	9.47	5.26	100
TMU	number	87	95	25	12	3	222
	% within user type	39.19	42.79	11.26	5.405	1.35	100
Total	number	142	164	75	29	11	421
	% within user type	33.73	38.95	17.81	6.89	2.61	100

		% mobile phone communication					Total
User type		0 - 20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%	
CMCU	number	52	37	14	1	0	104
	% within user type	50	35.58	13.46	0.96	0	100
MMU	number	9	24	32	24	6	95
	% within user type	9.47	25.26	33.68	25.26	6.32	100
TMU	number	82	92	32	12	4	222
	% within user type	36.94	41.44	14.41	5.405	1.80	100
Total	number	143	153	78	37	10	421
	% within user type	33.97	36.34	18.53	8.79	2.38	100

By examining country-level distribution of the typology built on the whole dataset, we find that COMU are more diffused in UK (38%) and less in Italy (20%), and these findings seem consistent with the fact that British workers use less traditional media, and especially F2F, and Italian have a more balanced use of traditional and new media.

Rather surprisingly, TMU are 11 percentage points more (64%) in The Netherlands and 11 less than average (41%) in Italy. Conversely and consistently with previous analysis, MMU are particularly diffused in Italy (39% respect 22%). In fact, Italians have a more balanced media mix (tab. 8). These results partially confirm hypothesis 1.a.

Tab. 8 Distribution of user types among the three countries

User type			%		
CMCU	104	24.7			
MMU	95	22.57			
TMU	222	52.73			
valid	421	100			
missing	169				
tot. pop.	590				

Country	User type	%	
UK	CMCU	32	38.1
	MMU	10	11.9
	TMU	42	50
	valid	84	100
	missing	29	
tot. pop.	113		

Country	User type	%	
The Netherlands	CMCU	41	22.16
	MMU	26	14.05
	TMU	118	63.78
	valid	185	100
	missing	86	
tot. pop.	271		

Country	User type	%	
Italy	CMCU	31	20.39
	MMU	59	38.82
	TMU	62	40.79
	valid	152	100
	missing	54	
tot. pop.	206		

Let's now check *who* are these user types in terms of age, gender, and education level, that is let's check the three forms of the fourth hypothesis. Unfortunately there is a certain number of missing cases (tab. 9), especially as concerning age (52%). However, dataset is still sufficient for running our analysis either because of its size or because missing cases distributes rather evenly among countries and user types.

Tab. 9 Valid vs. missing cases

User types by categories	Valid		Missing		Total	
	N	Percentage	N	Percentage	N	Percentage
age	308	52.2%	282	47.8%	590	100%
gender	375	63.6%	215	36.4%	590	100%
level of education	379	64.2%	211	35.8%	590	100%

Hypothesis 4a supposes that CMCU are mostly young workers, and at the opposite TMU are much older, and finally that MMU are in the middle. Being 22.7% the whole average of the youngest class (less than 31 years old), the hypothesis is partially confirmed (tab. 10), because

actually there is a major (31.6%) in CMCU and a lower share (23.2%) in TMU. However, MMU are not in the middle point, because they have the lowest value (10.9%). These difference are not so accentuated, because in the class over 50 years old there is nearly the same share for all the three groups. Moreover, when considering the class under 41 years old, any difference between CMCU and TMU vanishes, because they are both around 75%, which is the mean of the whole dataset. Only MMU are a little bit lower (70%). Counting for 55% of the whole organization, TMU covers between 50 and 56% in all age classes.

Tab. 10			Contingency table of age by user types				
			age (categories)				
			30 & under	31-40	41-50	over 50	30 & under
User types	CMCU	Abs. values	24	33	16	3	76
		% within user types	31.6%	43.4%	21.1%	3.9%	100%
		% within age	34.3%	21.0%	22.5%	30.0%	24.7%
	MMU	Abs. values	7	38	17	2	64
		% within user types	10.9%	59.4%	26.6%	3.1%	100%
		% within age	10.0%	24.2%	23.9%	20.0%	20.8%
	TMU	Abs. values	39	86	38	5	168
		% within user types	23.2%	51.2%	22.6%	3.0%	100%
		% within age	55.7%	54.8%	53.5%	50.0%	54.5%
Total	Abs. values	70	157	71	10	308	
	% within user types	22.7%	51.0%	23.1%	3.2%	100%	
	% within age	100%	100%	100%	100%	100%	

As concerning the gender issue, hypothesis 4b stated that, given its young average age and its core business in hi-tech, gender divide should not matter very much, and so that between the three groups there are not very significant differences, excepted for a light contrast between CMCU and TMU. This hypothesis is rejected, because there is a sharp unbalance between male and female either at the level of the whole organization, where male accounts for 70.7% of employees, or in each single user type (tab. 11). However, the idea that the Isocorp specific organizational mission and core business on computer hi-tech do mitigate gender divide is confirmed, because the gap between gender shares lowers from 58 points in TMU, to 35 points in MMU, and finally to 19 points in CMCU.

Tab. 11		Gender differences			
User types		male	female	Total	Male-female
CMCU	Abs. values	57	39	96	18
	% within user types	59.4%	40.6%	100%	0.188
	% within gender	21.5%	35.5%	25.6%	-0.14
MMU	Abs. values	57	27	84	30
	% within user types	67.9%	32.1%	100%	0.358
	% within gender	21.5%	24.5%	22.4%	-0.03
TMU	Abs. values	151	44	195	107
	% within user types	77.4%	22.6%	100%	0.548
	% within gender	57.0%	40.0%	52.0%	0.17
Total	Abs. values	265	110	375	155
	% within user types	70.7%	29.3%	100%	0.414
	% within gender	100%	100%	100,	0

Hypothesis 4c suggested that THE highest levels of education concern TMU, followed by MMU, and finally by CMCU, because computer-based tasks are used more intensively at lower hierarchical positions, but it advised also that the role played by the nature of young and computer technology of Isocorp would have mitigated such differences. This hypothesis is not confirmed, because TMU have the highest share (19.9%) of the highest level of education (tab. 12), but MMU have the lowest (10.34%), and CMCU the middle point (14.6%). Moreover, if we sum the lowest categories into a new one of undergraduate, we see that the order is reversed: TMU have the lowest share (42%), followed by CMCU (49%), and by MMU (74%). This fact can be explained supposing that, being a computer technology company, Isocorp has a significant number of CMCU into the highest hierarchical positions, to which correspond also higher levels of education. On the contrary, MMU could reflect more middle-lower management. This could explain also the moderate unbalance between CMCU in the highest age category (over 50 years old). Anyway, Isocorp employees have a high average level of education, because more than 64% of them are more than undergraduate.

Tab. 12		Levels of education per user types					
User types		high school	technical college	community college	1st university degree	postgraduate	Total
CMCU	Abs. values	15	19	13	35	14	96
	% within user types	15.63	19.79	13.54	36.46	14.58	100
	% within categories	25.86	19.39	34.21	28.46	11.38	25.33
MMU	Abs. values	21	35	8	14	9	87
	% within user types	24.14	40.23	9.20	16.09	10.34	100
	% within categories	36.21	35.71	21.05	11.38	7.32	22.96
TMU	Abs. values	22	44	17	74	39	196
	% within user types	11.22	22.45	8.67	37.76	19.90	100
	% within categories	37.93	44.90	44.74	60.16	65	51.72
Totale	Abs. values	58	98	38	123	62	379
	% within user types	15.30	25.86	10.03	32.45	31.71	100
	% within categories	100	100	100	100	100	100

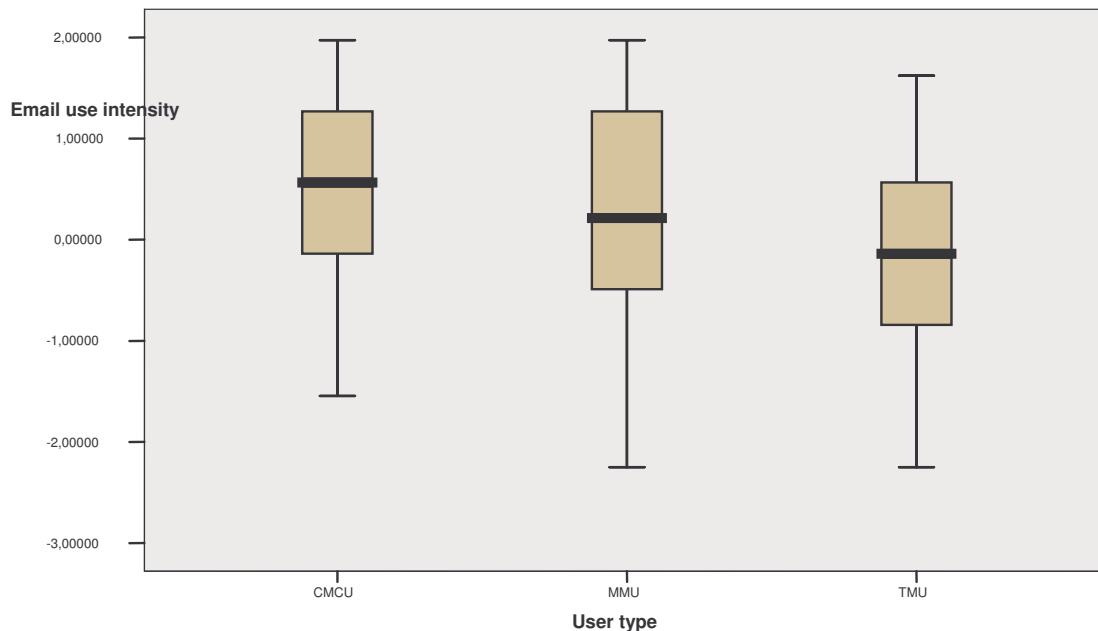
In order to test the fifth hypothesis, it has been analyzed the extent to which email received, frequency of reading and communication are associated each other. Results are positive, by showing the following contingency coefficients: 0,243 for email communication and email received; 0,299 for email communication and frequency; 0,349 for email received and frequency of reading. Then the analysis proceeded by extracting a linear component, which synthesized 71% of variance of variables. Hence, hypothesis 4 is confirmed.

It is possible now to correlate email use intensity with user types (tab. 13 and fig. 2). As expected, CMCU has a value almost double than MMU, while TMU is negatively correlated. Moreover, variance is much higher in MMU, just reflecting that this group is mixed by traditional and new media users.

Tab. 8

User type		Email use intensity in each user type							
	N	Mini mum	Maxi mum	Mean	Std. Dev.	Varia nce	Asym metry	Curtosi	
CMCU	104	-1,55	1,97	0,54	0,92	0,85	-0,46	-0,95	
	Valid cases	104							
MMU	95	-2,25	1,97	0,28	1,00	0,99	-0,21	-0,73	
	Valid cases	95							
TMU	222	-2,25	1,62	-0,18	0,91	0,82	0,00	-0,76	
	Valid cases	222							

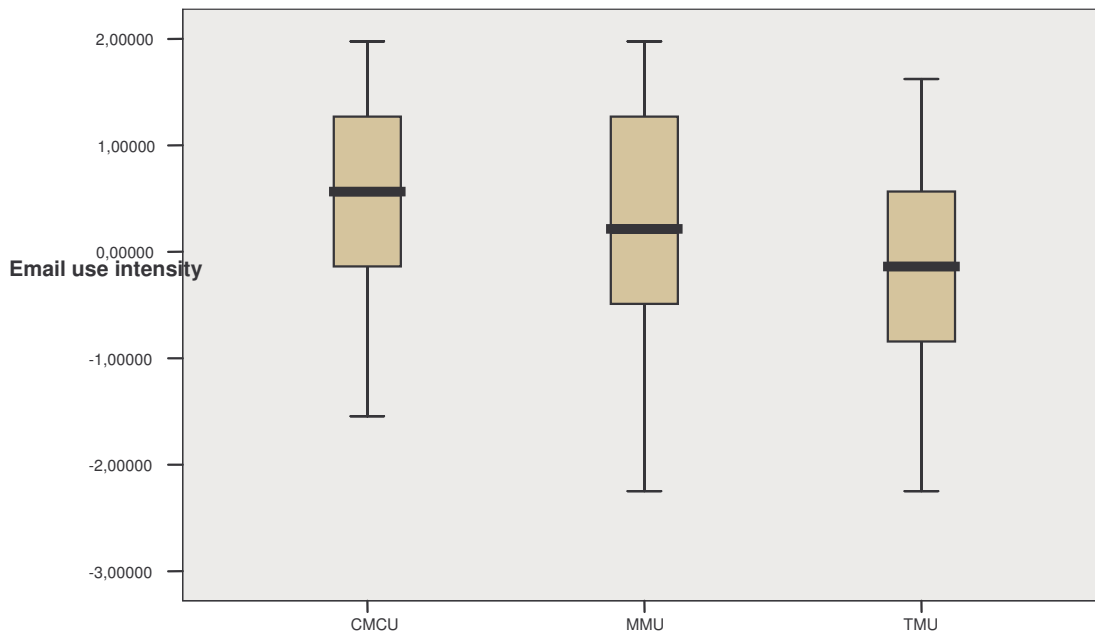
Fig. 2 Email use intensity in each user type



Next analysis tests the sixth hypothesis, which concerns the reliability of email use intensity index as a good proxy to identify user types (fig. 3). This hypothesis is confirmed too, because email use intensity significantly discriminates between the three groups: COMU type is associated with high degrees of email communication, and vice versa TMU with low degrees. In the middle there is the MMU type, which is characterized by a balanced mix between computer-mediated and traditional media, with the exception of F2F communication. In fact, correlation between factors and email use intensity is high (0.46) for the first factor, and uncorrelated for the other two factors (0.12 and 0.09).

Fig. 3

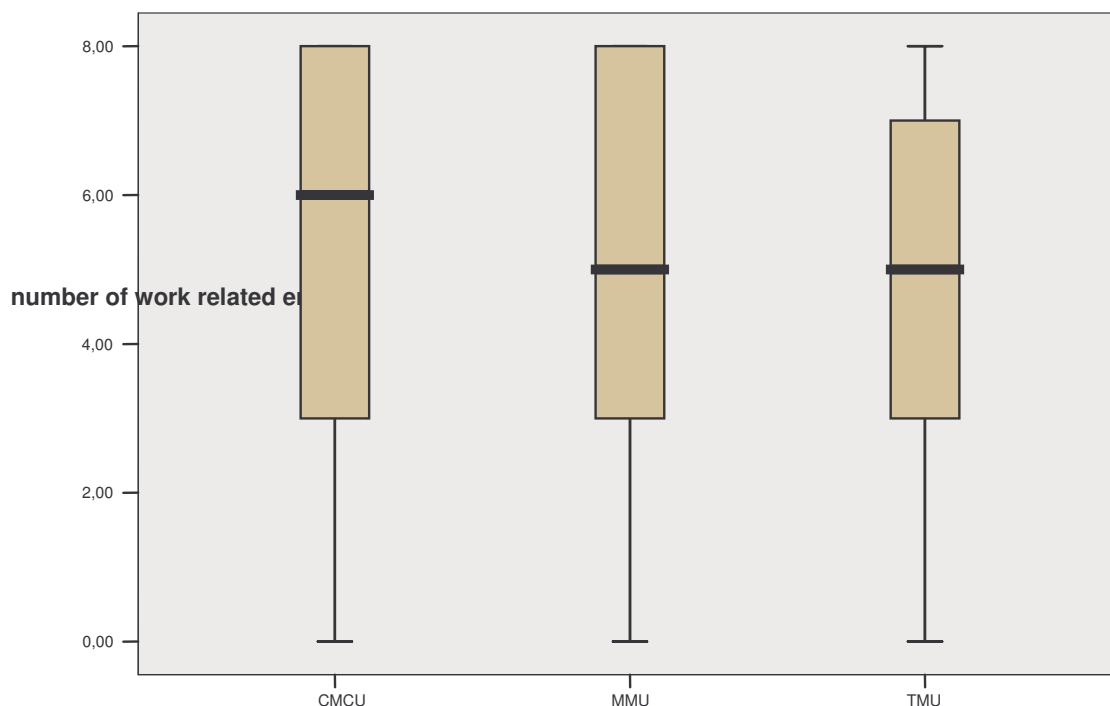
Relationship between email use intensity and user type



This relationship holds also between the number of work related emails and cluster type (fig. 4). COMU are characterized by high levels of work related emails received in the work place.

Fig. 4

Relationship between work related emails and cluster type



## 5. Discussion and conclusion

This study demonstrated that among three European subsidiaries of a large American multinational corporation there are three quite different types of media users, which are demarcated by the mutually exclusive presence of F2F and CMC. The digital gap between Italy and UK is only partially confirmed, because while new media communicators are much more present in the latter

than in the former country, traditional media users are more dominant in the Dutch subsidiary than in Italy. Rather, it seems that in this latter country traditional and multi-media users are well balanced.

As concerning the individuation of users identity, workers more oriented towards CMC are the youngest and traditional communicators are older, but the multi-media users are the oldest ones not in the middle range. Moreover, there is a sharp gender divide, because males are 70%. However, it is also true that such a divide dramatically reduces among computer-mediated communicators.

Though traditional media users present the most accentuated gender divide, they have the highest levels of education, followed by multi-media users, and finally by computer-mediated communicators. This suggests also that computer-related tasks are more intensively used at lower hierarchical positions. Finally, it is also confirmed that the index of email use intensity is a good proxy to identify media user types: traditional media users are totally uncorrelated with this index, while the other two groups are positively correlated and associate with it growing from multi-media to CMC. These latter can also be identified by looking at high number of work related emails.

We should be very cautious in interpreting these results, either because they refer to the whole dataset and not to single countries or because the distinction between traditional and new (computer-mediated) communication media is dense of subtle questions. One of the most crucial is that in both categories there are means with very different technical potentialities. For instance, since F2F not only is the oldest and purest traditional medium, it is also the richest one, and so it should be kept rather distinguished from the others. Moreover, CMC is indeed a galaxy of media with rather distinguished technical and social characteristics: for instance, internet could be considered much richer than email, allowing for voice, video, multi-party and simultaneous or asynchronous communication. Moreover, over time they likely will show rather different ways and intensities of use and diffusion. Finally, these results have not been controlled for distinguishing the influence of collective decisions.

## References

- Argenti, P.A. (1998). Strategic employee communications. *Human Resource Management*. 37(3/4): 199-206.
- Balogun, J. and Hope Halley, V. (2003). *Exploring strategic change*. London: Prentice-Hall.
- Black, J.S. and Porter, L.W. (1991). Managerial behaviors and job performance: A successful manager in Los Angeles may not succeed in Hong Kong. *Journal of International Business Studies*. 22(1): 99-113.
- Burke, K. and Chidambaran L. (1999). How much bandwidth is enough? A longitudinal examination of media characteristics and group outcomes. *MIS Quarterly*. 23(4): 557-579.
- Cecez-Kecmanovic, D., Moodie, D., Busuttil A. and Plesman F. (1999). Organizational Change Mediated by E-mail and Intranet. An Ethnographic Study. *Information Technology & People*. 12: 9-26.
- Clampitt, P.G. and Downs, C.W. (1993). Employees perceptions of the relationship between communication and productivity: a field study. *Journal of Business Communication*. 30: 5-28.
- Contractor N. S., Seibold D. R. and Heller M. A. (1996) Interactional influence in the structuring of media use in groups. influence in members' perceptions of group decision support system use. *Human Communication Research*. 22(4): 451-481

- Contractor N. S. and Seibold, D. R. (1993). Theoretical frameworks for the study of structuring processes in group decision support systems: Adaptive structuration theory and self-organizing systems theory. *Human Communication Research*. 19: 528-563.
- Daft, R.L., and Lengel, R.H. (1984). Information richness: A new approach to managerial behavior and organisational design. *Research in Organisational Behavior*. 6: 191-233.
- Daft, R.L., and Lengel, R.H. (1986). Organisational information requirement, media richness and structural determinants. *Management Science*. 32: 554-571.
- Daft, R.L. and Lengel, R.H. (1988) The Selection of Communication Media as an Executive Skill. *Academy of Management Executive*. 2(3): 225-332
- Daft, R.L. and Macintosh, N.B. (1981) A tentative exploration into the amount and equivocality of information processing in organizational units. *Administrative Science Quarterly*, 26: 207-224
- Daft, R.L., Lengel, R.H. and Trevino, L.K. (1987) Message Equivocality, Media Selection, and Manager Performance: Implications for Information Systems. *MIS Quarterly*. 11(3): 355-366
- Davis, F.D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*. 13(3), 319-340.
- De Bussy, N.M., Ewing, M.T. and Pitt, L.F. (2003). Stakeholder theory and internal marketing communications: a framework for analyzing the influence of new media. *Journal of Marketing Communications*. 9: 147-161.
- Dolphin, R.R. (2003). The corporate communication function: how well is it funded? *Corporate Communications: An International Journal*. 8(1): 5-10.
- Dolphin, R.R. (2005). Internal communications: today's strategic imperative. *Journal of Marketing communications*. 11(3): 171-190.
- Dortok, A. (2006). A managerial look at the interaction between internal communication and corporate reputation. *Corporate Reputation Review*. 8(4): 322-338.
- Frank, A. and Bronwell, J. (1989). *Organizational communication and behaviour: communicating to improve performance*. Orlando (FL): Holt, Rinehart and Winston.
- Fulk, J. and DeSanctis, G. (1999). Articulation of Communication Technology and Organisational Form. In G. DeSanctis and J. Fulk (Eds.) *Shaping organisation form: communication, connection and community*. Newbury Park (CA): Sage.
- Fulk, J., and Boyd, B. (1991). Emerging theories of communication in organisations. *Journal of Management*. 17: 407-446.
- Gordon, G. (1998). The state of internal communication: three views. *Communication World*. 15(4): 11-13.
- Goodman, J. and Truss C. (2004). The medium and the message: communicating effectively during a major change initiative. *Journal of Change Management*. 4(3): 217-228.

- Harkness, J. (2000). Measuring the effectiveness of change: the role of internal communication in change management. *Journal of Change Management*. 1(1): 66-73.
- Heath, R.L. (1994). *Management of corporate communication*. Hillsdale (NJ): Lawrence Erlbaum Associates.
- Kedia, B.L. and Bhagat R.S. (1988). Cultural constraints on the transfer of technology across nations: Implications for research in international and comparative management. *Academy of Management Review*. 13: 559-71.
- Kiesler, S., Siegel, J., and McGuire, T. (1984). Social psychological aspects of computer-mediated communications. *American Psychologist*, 39, 1123-1134.
- Kirtley Johnson, M., Reed, K., Lawrence, K. and Onken, M. (2007). The link between communication and financial performance in simulated organizational teams. *Journal of Managerial Issues*. XIX(4): 536-553.
- Kitchen, P.J. and Daly, F. (2002). Internal communication during change management. *Corporate Communications: An International Journal*. 15(2): 169-183.
- Klein, S.M. (1996). A management communication strategy for change. *Journal of Organizational Change Management*. 9(2): 32-46.
- Laurent, A. (1983). The cultural diversity of Western management conceptions. *International Studies of Management and Organization*. 8(1-2): 75-96.
- Lebie, L., Rhoades, J.A. and McGrath, J.E. (1996). Interaction processes in computer-mediated and face to face groups. *Computer Supported Cooperative Work*. 4: 127-152.
- Lievens, A., Moenaert, R.K. and S'Jegers R. (1999). Linking communication to innovation success in the financial services industry: a case study analysis. *International Journal of Service Industry Management*. 10(1): 23-47.
- Markus, M.L. (1994a). Electronic Mail as the Medium of Managerial Choice. *Organization Science*. 5: 502-527.
- Markus, M.L. (1994b). Finding a Happy Medium: Explaining the Negative Effects of Electronic Communication on Social Life at Work. *ACM Transactions on Information Systems*. 12: 119-149.
- Markus, M.L. and Robey, D. (1988). Information Technology and Organizational Change: Causal Structuring Theory and Research. *Management Science*, 34(5): 583-598.
- McGrath, J.E. (1991). Time, interaction and performance (TIP): a theory of groups. *Small Group Research*. 22(2): 147-174.
- Orlikowski, W.J., Okamura K. and Fujimoto M. (1995). Shaping Electronic Communication: The Metastructuring of Technology in Use. *Organization Science*. 6: 423-444.
- Pettit Jr., J.D., Goris, J.R. and Baught, B.C. (1997). An examination of organizational communication as a moderator of the relationships between job performance and job satisfaction. *Journal of Business Communication*. 34: 1-99.

- Pincus, J.D. (1986). Communication satisfaction, job satisfaction, and job performance. *Human Communication Research*. 12: 395-419.
- Pitt, L., Murgolo-Poore, M. and Dix, S. (2001). Changing change management: the intranet as catalyst. *Journal of Change Management*. 2(2): 106-114.
- Putti, J., Aryee, S. and Phua, J. (1990). Communication relationship satisfaction and organizational commitment. *Group and Organization Studies*. 15: 44-53.
- Smidts, A., Pruyn, A.T.H. and Van Riel, C.B.M. (2001). The impact of employee communication and perceived external prestige on organizational identification. *Academy of Management Journal*. 44(5): 1051-1062.
- Spears, R. and Lea, M. (1994). Panacea or panopticon? The hidden power in computer-mediated communication. *Communication Research*. 21: 427-459.
- Sproull, L. and Kiesler S. (1986). Reducing social context cues: electronic mail in organizational communication. *Management Science*. 32(11): 1492-1512.
- Sproull, L. and Kiesler S. (1991). *Connections: New Ways of Working in the Networked Organization*. Cambridge (CA): MIT Press
- Straub, D.W. (1994). The effect of culture on IT diffusion –E-mail and fax in Japan and the United-States. *Information System Research*. 5(1): 23-47.
- Straub, D.W., Keil, M., and Brenner W. (1997). Testing the technology acceptance model across cultures: A three country study. *Information & Management*. 33(1): 1-11.
- Tan B. C.Y., Wei K., Watson R. and Walczuch R. M. (1998). Reducing status effects with computer-mediated communication: evidence from two distinct national cultures. *Journal of Management Information Systems*. 15(1): 119-141.
- Klebe Treviño, L., Webster, J. and Stein E.W. (2000). Making connections: complementary influences on communication media attitudes, and use. *Organization Science*. 11(2): 163-182.
- Varona, F. (1996). Relationship between communication satisfaction and organizational commitment in three Guatemalan organizations. *Journal of Business Communication*. 33: 111-141.
- Walther, J.B. (1992). Interpersonal Effects in Computer-Mediated Interaction: a Relational Perspective. *Communication Research*. 19: 52-90.
- Walther, J.B. (1995). Relational Aspects of Computer-Mediated-Communication: Experimental Observations over Time. *Organization Science*. 6(2): 186-203.
- Walther, J.B. (1996). Computer-mediated communication: impersonal, interpersonal and hyperpersonal interaction. *Communication Research*. 23(1): 3-43.
- Walther, J.B. and Tidwell, L.C. (1995). Nonverbal cues in computer-mediated communication, and the effect of chronemics on relational communication. *Journal of Organizational Computing*. 5(4): 355-378.

- Yates, J. and Orlikowski W.J. (1992). Genres of Organizational Communication: An Approach to Studying Communication and Media. *Academy of Management Review*. 17: 299-326.
- Yates, J., Orlikowski, W.J. and Okamura K. (1999). Explicit and Implicit Structuring of Genres in Electronic Communication: Reinforcement and Change of Social Interaction. *Organization Science*. 10: 83-103.
- Zack, M.H. and McKenney J.L. (1995). Social Context and Interaction in Ongoing Computer-supported Management Groups. *Organization Science*. 6: 394-422.