

Give the boss a break from email: Managers and their communication

Olle Bälter

Department of Computing Science

Royal Institute of Technology

SE-100 44 STOCKHOLM

SWEDEN

+46 8 790 91 57

balter@nada.kth.se

ABSTRACT

Many employees are depending on their manager's abilities to communicate. Therefore it is essential that managers master their tools for communication. This study describes the situation for managers in a company where all employees had access to and used email for communication. Results show that managers use email more than telephone. Half of the respondents allowed incoming email to interrupt other tasks, despite their need for uninterrupted time. Unwanted carbon copies was considered a problem by the respondents, but the time spent handling them seems to be neglectable.

Keywords

Email, interruptions, carbon copies, managers

1. INTRODUCTION

The ever increasing demands on efficiency has caused many companies to use computers to communicate more productively. Previous research has shown that email changes both the way people work (Hiltz and Turoff 1988) and their organisations (Sproull and Kiesler 1991). This paper describes a case study of a company where all employees had access to and used email. The purposes of the paper are to identify and describe differences in communication between managers and other employees, problems for managers to handle their email communication, and remedies to discovered problems.

Email facilitates communication by its high speed, asynchronusness, and computer processability (Palme 1995), and is believed to increase personal and organizational productivity (Rice & Bair 1984). More than ten years ago Hiltz and Turoff (1985) described the impact of a Computer Mediated Communication System (CMCS):

The most fundamental impact of a CMCS is to increase the social connectivity of users (i.e., the number of people in regular communication) by about a tenfold.

That is CMCS can be used to maintain communication with more people. Today, Maes (1996) describes that communication possibilities is one of the main advantages of a computer:

The most important change is that we view the computer as a communications device that links people to each other, and to information, instead of seeing it primarily as a calculator.

CMCS in form of email has millions of users all over the computerised parts of the world. Nowadays, email has been developed to groupware systems for collaboration that are integrated with databases, word processors, drawing tools and spreadsheets. This causes an increased complexity in managing the tool, while interfaces with a

graphical direct manipulative style hopefully have reduced the same problem.

According to Sproull & Kiesler (1991) electronic communication is more honest and straight-forward than meetings and telephone because the sender is less aware of the receiver. E.g. gender, status, and voice are less obvious in an e-mail message and cannot be used to enforce viewpoints. For face-to-face meetings there are social norms, both implicit and explicit, while electronic communication introduces new social situations with few known or generally accepted norms. This implies that norms cannot be used the same way to e.g. make the arguments of an organisational superior more important than others.

Managers abilities to communicate efficiently are considered to influence their employees performance and work satisfaction (Alexander, Helm & Wilkins 1989). Managers abilities to collaborate with customers and to give feedback to their employees may increase productivity (Hessner 1993). This implies that e-mail could be a suitable medium for managers.

Several studies have shown that managers are under time pressure and that one of the most severe problems is that they are repeatedly interrupted (Carlson 1951; Stewart 1967; McCall, Morrison & Hannan 1978; Edlund 1990; Tollgerdt-Andersson 1995). O'Conaill & Frohlich (1995) describe a workplace study where the subjects on average were interrupted four times per hour. This frequency is likely to be higher for managers. The number of interruptions could be reduced by using email or other asynchronous media, but do managers use email asynchronously or do incoming email messages cause more interruptions?

Markus (1994b) describes that many managers routinely allowed themselves to be interrupted by incoming email messages, but also that most employees in his study did not use email yet. One reason for managers to respond immediately to email messages may therefore be that many or most of these messages are from other managers and therefore considered as important. Will the situation change when *all* employees use email, as they do in the present study?

Markus also describes how users deliberately use email to avoid unwanted social interaction (Markus 1994a). Social communication demands between 60 to 80 % of the avail-

able work hours for a manager (Burns 1954; Stewart 1967; Kotter 1982; Lawrence 1984). Among the many abilities wanted in a manager, the skills to communicate, maintain, and develop relations, and also to stimulate employees and other interested parties are considered to be among the most important (Tollgerdt-Andersson 1995). Luthans & Lockwood (1984) describe that 29% of all communication consists of "routine" communication. Again, email may be suitable to handle at least a part of this.

One solution for overloaded managers may be to delegate more to their subordinates, but to delegate is a complicated task as Milewski and Lewis (1997) describe for several reasons. Managers fear that: quality will decrease, they will lose control and get less credit, the subordinate will fail, or they may be perceived as tyrants by the subordinates. Some tasks are a pleasure to perform, and these are not so easy to delegate. All this works against delegation.

Email raises demands on managers in many different ways. When an email systems is to be introduced in an organisation, Wijn (1996) claims that it is very important that managers show that they are determined to use the mail system. This may decrease initial problems with attitudes such as "why should I spend time to learn this program". Isherwood (1996) advises that senior managers participate in all aspects of groupware implementation planning due to the major impact on the organisation that a groupware system may have. Burke (1996) advocates that managers should participate in electronical debates with imperfectly written messages in order to enable the employees to contribute with proposals that do not have to be perfect from the beginning. All this makes it essential for managers to handle their email system well.

However, Lantz (1995, 1996) describes that it is common that managers have problems handling their email. Whittaker & Sidner (1996) found that managers receive more email messages than others and at the same time they have less time to handle them. Are all these messages necessary or are there possibilities to reduce the number of email messages to managers by reducing the number of unwanted messages by e.g. reducing unnecessary carbon copies (cc)? This problem with carbon copies is investigated in this study.

The next section contains a short description of the studied

company, here named MainframePC, and the methods used in the case study. This is followed by results describing the situation for managers at MainframePC. Finally, a discussion about possible solutions to the detected problems follows.

The purpose of the present study was to investigate managers' communication at MainframePC. The three main problems investigated were: 1) How managers use email, when *all* employees have access to email. 2) Do managers take advantage of email to reduce the number of interruptions? and 3) Is there a simple way to reduce the number of unwanted messages? This study was a part of an extensive study of the transfer from two old mainframe systems to Lotus Notes described in Bälter (1997a, 1997b, 1998).

2. MAINFRAMEPC

MainframePC's business concept was to provide customised computer solutions with everything from batch jobs such as monthly payment of salaries to development of applications. The company had approximately 600 employees and was mainly located at two sites approximately 120 km (75 miles) apart. One site was in a major city, the other one in a country side village. Both sites were roughly the same size. MainframePC was a part of a global mother company with several tens of thousands of employees that had similar work tasks.

The company had traditionally used mainframe computers, but with the growing PC market, the focus of the business had gradually shifted towards personal computers. The backbone of the electronic communication within the company was electronic mail handled by two different mainframe systems, one at each site. The reason for this was that the country side site was bought a decade ago and continued to use their already established email system. A substantial amount of the employees worked mainly or solely with mainframe computers and will do so for years to come. All employees had access to at least one of the two mainframe email systems, many also to Lotus Notes.

3. METHOD

In order to gather background information for a survey and achieve an understanding of the company a pre-study with a set of initial interviews was made with the group

responsible for the introduction of Notes at MainframePC and six employees that were selected to achieve maximum diversity regarding usage of mail system (Notes or one of two mainframe mail systems), position (manager or not), and location (main or country side site).

The interviewees were also asked to answer preliminary versions of the questionnaire during the interview. Some participatory observations were made, by taking internal classes in usage of the mainframe systems and Notes.

3.1 Survey

The 14 page survey covered five general topics:

- Work situation: Describe work tasks, your position, how and what kind of information you share with others.
- Communication: How often do you communicate, with whom and why, and which media are used?
- Computer system: What operating systems do you use? What applications do you use and for what? What are your opinions about your systems and applications?
- Email system: How long experience do you have, how do you use email, where do you use it and who do you send them to?
- Email handling: How do you save, organise, delete, and search your email messages? How many messages do you receive and send?

The questionnaire was sent by internal paper mail to 79 employees and 37 managers. Within both groups, all were selected randomly. All had more than six months of employment at the company. In total, 81 people responded, 81% of the managers and 61% of the other employees.

4. RESULTS

The employees of MainframePC could be divided by position in four groups: employees, project managers (without personnel responsibilities), group managers and high rank managers (with personnel responsibilities). The question that divided the respondents into managers and employees was

Which is your position (several alternatives possible for project managers)?

With the alternatives: Employee, Group manager, Project

manager, and High rank manager.

In table I the distribution of the respondents' positions is displayed. The two project managers that also were group managers were classified as group managers.

The three manager groups are in this study sometimes joined in one group named "managers". The two groups "group managers" and "high rank managers" are occasionally joined in a group named "Personnel managers" since they have a higher amount of responsibility for the personnel compared to project managers.

Table I. Position

Employee	Project managers	Group managers	High rank managers
39	18	18	6
----- Managers -----			
--- Personnel managers ---			

4.2 Communication

A manager mentioned in an interview that the main disadvantages with email were:

- 1) Too many messages, especially as a manager
- 2) Many take for granted that what is written and sent also become read
- 3) It is difficult to handle subtle distinctions (such as intonation and irony)

The two first may illustrate the situation for a manager overloaded with information.

We asked how much time the respondents spent on email,

phone and planned meetings, and also how many email messages they sent and received per day in average (a message sent to several recipients counted as one). The answers are displayed in table II.

The time spent on email and planned meetings increased with position, while the time used for phone was approximately the same regardless of position. Meetings and email may be more suitable to organise work and to delegate tasks than telephone.

Personnel managers (group managers and high rank managers) received more email messages than others (project managers and employees, t-test P-value 0.0055), sent more email messages than others (t-test P-value 0.0060), and used more time for email than others (t-test P-value 0.0008). As in earlier studies (e.g. Mackay 1988, Palme 1995, Bälter 1995, Lantz 1995) the number of sent and received messages are correlated; and more messages are received than sent. A former manager with five sent and five received messages a day commented this in the survey:

When I was an active manager it was 10 [sent] and 60 [received].

No significant differences could be detected between position and usage of phone. It seems as the increased communication that follows a higher position is mostly email and meetings. Whether the differences in table II was a sign that managers at MainframePC were overloaded with information is not clear, but the fact that managers used email more than employees is unquestionable.

Table II. Time spent on communication via phone, email and planned meetings (mean of minutes per day) by the respondents.

Position	Email/day			Phone/day		Planned meetings/day	
	Time	Received	Sent	Time	#	Time	#
High rank manager (n=6)	103 m (69)	21 (12)	18 (12)	53 m (30)	16 (6)	2.8 h (1.6)	1.3 (0.8)
Group manager (n=18)	79 m (51)	17 (12)	14 (12)	46 m (17)	11 (6)	1.4 h (0.6)	0.7 (0.4)
Project manager (n=18)	62 m (72)	14 (17)	11 (17)	41 m (34)	8 (4)	1.1 h (0.6)	0.7 (0.5)
Employee (n=39)	35 m (29)	8 (8)	5 (5)	52 m (58)	12 (12)	0.4 h (0.3)	0.2 (0.2)
Based on 5 working days a week and 21 working days a month. Standard deviation within parenthesis.							

4.3 Email usage

The usage of email may be affected by how experienced a person is and this may be a source of differences between more experienced managers and recently hired employees. However, as shown in table V managers had only a slightly longer experience of email (t-test P-value 0.0053) than the employees. The mean value was 10 years. 91% of the respondents had more than four years of experience.

Table III. Email experience (mean value in years)

Position	Experience	Standard deviation
High rank manager	13 years	6.1
Group manager	11 years	4.2
Project manager	12 years	3.1
Employee	9 years	4.9

Managers had a tendency to send a larger percent of their messages outside the company, both domestic and abroad (t-test P-value 0.098). This may indicate a more complex work situation, which is confirmed by the usage of operating systems. We asked what operating systems the respondents used. Although no differences in *which* operating system used are significant, managers had a tendency to use *more* operating systems (mean 2.7 compared to 2.4, t-test P-value 0.056).

Access frequency

The access frequency, that is the number of occasions per day a user checks her email can indicate how important email is for her communication. Therefore we asked how often the respondents checked their email with the alternatives:

Less often than once a week.

Once a week.

Several times a week.

At some occasion during the day.

Several times a day

Continuously, incoming email may interrupt other tasks.

Other way:

The answers are displayed in tabell IV. The table uncovers that 93% checked their email several times a day, and that all but one check email daily. Half of the respondents allowed incoming email messages to interrupt on-going tasks. There were no statistically significant differences between managers and employees. This gives the impression that email was a very important communication tool for the company.

Another way of measuring the importance of email, besides the access frequency, is the need to access email at other places than the ordinary work place. Therefore we asked:

How often do you have a need to read your email at

other places than your ordinary workplace?

Do you use email via modem? If so, please state where.

Table IV. Access frequency for email systems

	#	%
Several times a week	1	1 %
Some occasion during the day	5	6 %
Several times a day	34	43 %
Continuously, incoming mail may interrupt other tasks	40	50 %

Personnel managers claimed a greater need to read their email at other places than their ordinary workplace. Divided into weekly or more often a Chi²-test (1 df) = 11.1 gives a P-value < 0.001.

Of the 46 respondents (56%) that used a modem all but one used it at home (85% solely at home). 83% of the Personnel managers used modems compared to 50% for others. There was a tendency for modem users to have a need to access their email more often than others (t-test P-value 0.064) and the need to access email at other places may also be solved by other means: the two mainframe mail systems both gave possibilities to access email from others offices in the global mother company or at customers'.

Email messages are asynchronous by nature, but is often used for communication in form of dialogues (Severinson-Eklundh 1996). At MainframePC there was no policy for how large documents distributed via email should be. Messages that were a part of a dialogue was sent back and forth with comments and new questions added. These messages could sometimes become very long (and hard to read). Some recommend that email messages should be replied to immediately. Therefore we asked:

How long may email messages normally remain before they are completely handled, in other words: How long is your backlog?

The answers are presented in table V and the time is once again increasing with higher position. The difference between Personnel managers and others has a t-test P-value of 0.061.

Table V. Backlog

Position	Backlog
High rank manager	3.7 days
Group manager	2.2 days
Project manager	1.9 days
Employee	1.6 days

Backlog can be difficult to estimate, but there are several reasons for why managers should have a longer backlog. Managers often have a high workload (Wright 1996), that can prevent them from answering messages immediately. The pre-study uncovered a problem that automatically prolongs managers backlog: Managers receive messages from superiors that demand information that the manager does not have herself. The manager then must ask one or several employees for the information, and may have to wait for their answers, see figure I.

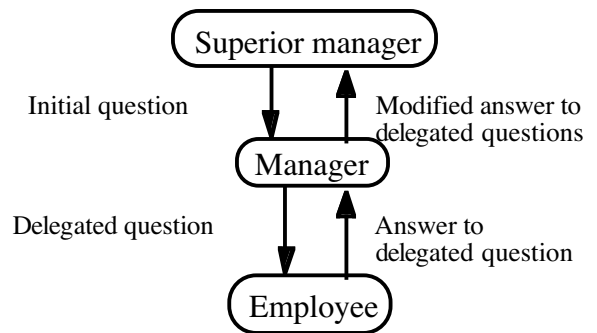


Figure I. Manager backlog explained by their middle man position

One manager explained backlog problems during an interview: There exists an unspoken expectation that email messages that do not demand an investigation should be answered within a few hours, and those that do within a few days. For those that are in a supervising position and delegate tasks these messages are very important to discover among the others. Everybody attempts to find their own strategy to survive.

Darr (1996) noted that some managers may have problems with asking for help, as this might be seen as a sign of weakness. Therefore we asked how the users would like to learn the new Notes system. No differences could be found between managers and employees willingness to ask colleagues for assistance. This contradicts Darr, but may be explained by cultural differences between Australia and Sweden.

4.4 Unwanted messages

In the pre-study of the company a problem with unnecessary carbon copies were described as the “cc-disease”, when messages were sent as carbon copies “just in case” to managers. Advice had been distributed within the company to limit the number of carbon copies, but without a major impact. In this company the cc-problem may partly be explained by the SYA (Save Your Ass)-attitude. The three letter acronym was generally known in the company, and employees often sent messages with cc to managers. If anything went wrong later, the manager became partly responsible since “he/she was informed”. Also, there was no spoken policy for what messages should be distributed via email or via an electronic bulletin board. The feeling for this was “developed by time”, as one manager expressed it during an interview. In order to examine how many these messages were we asked

How large amount (in percent) of your email is messages that is not necessary for you to read (e.g. unnecessary carbon copies (cc), information that arrives to late or too early)?

How large amount (in percent) of your incoming email do you believe that it would be better to distribute in another way (e.g. an electronic bulletin board)?

The answers are presented in table VI.

If these unwanted messages did not exist, how much time would the receiver save? The answers give a possibility to estimate an upper limit of potential time savings by eliminating the unwanted/unnecessary email messages. If the numbers in table VI are independent, and the time to handle an incoming message is one eighth of an outgoing message (Bair 1979) then only six people in this study would save more than five minutes a day. The person that would save most would save 19 minutes. However, uninteresting messages probably take shorter time than average to handle, so the time saved is probably much less. The conclusion is that this is not an efficient way to save time. On the other hand, even 5 minutes a day can be perceived as valuable time for certain people, and the cognitive load of being overloaded with the *wrong* tasks may make effort to reduce these messages worth some consideration.

Table VI. Percentage of unwanted email

Position	Unnecessary (%)	Distribute in another way (%)	Sum unwanted messages
High rank manager	20 %	14 %	34 %
Group manager	11 %	6 %	17 %
Project manager	12 %	11 %	23 %
Employee	12 %	10 %	22 %

5. DISCUSSION

We have presented a study of a technical company where all employees had access to email and a long experience of it. This study has illustrated that managers communicate more than employees, participate in more meetings, and use email more than others. Phone usage did not differ between the different positions (employee, project manager, group manager, and high rank manager). The media to handle the increase in communication that follows a higher position are most of all email and meetings. Managers allowed incoming messages to interrupt them to the same extent as employees ñ the higher position have not changed their behaviour.

The results may be difficult to generalise but the study have similarities with other studies (Whittaker & Sidner 1996; Lantz 1996) e.g. regarding the number of email messages.

Managers' communicative situation

To be a manager is to communicate. Previous research (Burns 1954; Stewart 1967; Lawrence 1984) describes how 60-80% of a manager's work time is used for communication, which is confirmed in this study. Meetings, planned as well as spontaneous, take a major part of the day. The large number of spontaneous meetings increases demands on “free time” in the schedule and reduces the possibilities to work undisturbed for a long consecutive time which demands flexibility from managers.

There are two ways to reduce the time spent in meetings: reduce the number of meetings and reduce the length of each meeting by making the meetings more efficient. Darr

(1996) suggests that the number of meetings can be reduced and become more effective with the aid of a groupware-system:

People are coming to meetings better prepared. Tangential issues which used to side-track meetings can now be discussed via Notes prior to the meeting. Also, there is a better follow-up after meetings. Before Notes, people would forget who was supposed to do what. Now, there are records that remind people when and what they are supposed to do.

The problems mentioned can also be reduced by discipline at the meetings and protocols that clearly states who should do what. Asynchronous groupware systems may facilitate discussions between people separated geographically and/or are difficult to gather in a room at the same time. Also, the groupware system provides all users with a facility for storage and retrieval of minutes. If one user has the minute, then all users have access to it, regardless of the order among their paper files.

However, Kraut & Galegher (1990) have investigated empirically how often people collaborate depending on whether people work in the same corridor, on the same floor, on different floors, or in different buildings. Results show that the closer people are located, the more they collaborate, and Kraut & Galegher argue that the possibilities to discuss informally are important for cooperation.

The informal discussions that occur at meetings can therefore be as important as the issues handled according to the minute. Thus, it is uncertain if more effective meetings would be an improvement of the managers total situation. Communication is a far too complex task to be reduced to email messages and meeting minutes.

Managers' email usage

Besides the more extensive email usage, managers also stated that they had a need to read email messages at other sites than their ordinary workplace. The many messages handled by managers increase demands on the mail system to give fast possibilities to write email messages, and to facilitate for managers to communicate via email regardless of location. Some mail tools (for example Eudora and Notes) have facilities to allow the user to write

messages while the computer is disconnected from the net.

In the pre-study, the "cc-disease" was mentioned, that is that many "just in case" sent a carbon copy (cc) to their managers, and some managers felt that this caused many un-necessary email messages. This study implies that the time saved by eliminating these messages is limited to 5 to 20 minutes in this company, but for some managers this may be valuable time.

Most of all the managers' situation could be improved by using email asynchronously instead of synchronously and thereby reduce the mental workload as well as the number of interruptions. Miyata & Norman (1986) describe two different ways to handle tasks: task driven and interrupt driven. When people work in a task driven way, they attend to one task primarily and ignore other events; when they work in an interrupt driven way, they change activities continually to respond to new events. All people use both, and both have advantages and disadvantages. Task driven handling requires possibilities to queue incoming tasks, while interrupt driven handling requires support for re-starting an interrupted task. Leadership research describes how one of the major problems for managers is that they repeatedly are interrupted, and get too short periods of consecutive undisturbed time. It would therefore be an advantage if managers could work more in a more task driven way in certain situations.

One of the major advantages with email is that the communication is asynchronous and therefore facilitates task driven processing, but half of the respondents in this study stated that they allowed incoming messages to interrupt on-going tasks, which means that the communication becomes more synchronous. Berghel (1997) describes the demands from incoming email messages:

One normally can't ignore email, as one ignores the telephone, without the potential of repercussion – even if it's unsolicited and from a stranger.

Why cannot, at least managers, wait until a natural break to handle incoming messages? In Bälter (1995) twelve email users were asked if they perceived incoming messages as interrupting for other tasks, but no-one thought so. On the contrary many claimed that interrupts were valuable. The interruptions were described with expressions as "necessary micro-breaks" and "it is fun to

receive email". Similar results occur in Lantz (1995, 1996). Although it may be enjoyable to receive email, it is questionable if it is wise to repeatedly be interrupted by incoming messages. A possible explanation for this behaviour is that a new email message is handled as a phone call, perhaps because they both give an audio signal. Also, one reason to answer email messages immediately is to avoid a time consuming phone call or even a personal visit if the sender of the message perceives the waiting for an answer too long.

There existed no policy for email usage at MainframePC. A clear policy that states how often an employee is expected to read email could reduce the pressure to answer immediately, and reduce the number of context switches that occur when a person interrupts the current task to read a newly arrived message. For managers this can be particularly valuable to give them the consecutive undisturbed time that they need. It is especially important to give managers support to handle their situation considering all people that are depending on managers abilities to handle their communication.

In conclusion: a policy for how often email should be read could reduce the stress to read all messages instantly both for managers and employees, otherwise valuable time will vanish. Unwanted carbon copies is annoying, but not really a time consumer.

6. ACKNOWLEDGEMENTS

This study was funded by the Swedish Transportation and Communications Research Board. Many thanks goes to my contacts and the employees at MainframePC. Also, I would like to thank Kerstin Severinson-Eklundh, Ann Lantz, and Ovidiu Sandor at the Royal Institute of Technology, Jon Guice at Stanford University, and Katarina Augustsson at the Karolinska Institute, for valuable comments on earlier versions of this paper.

7. REFERENCES

- Alexander E., Helms M. & Wilkins R. (1989): *The relationship between supervisory communication and subordinate performance and satisfaction among professionals*. Public Personnel Management. 18, pp 415-429.
- Bair J. (1979): *The Impact of Office Automatisations*, The Office of the Future, Uhlig, Farber, Bair, North-Holland 1979.
- Berghel H. (1997): *Email – The Good, The Bad, and the Ugly*. CACM, vol. 40, no 4, April 1997. pp 11-15.
- Burke C. (1996): "Arthur Andersen & Co: Virtual Visioning", in P. Lloyd and R. Whitehead (eds): *Transforming Organisations Through Groupware. Lotus Notes in Action*, Springer -Verlag Berlin, 1996, pp 63-69.
- Burns T. (1954): The directions of activity and communication an a departmental executive group: A quantitative study in a British engineering factory with a self recording technique. *Human Relations* 7(1): pp73-97.
- Bälter O. (1995): *Electronic mail from a user perspective: Problems and remedies*. Licentiate thesis. IPLab report 100, NADA, Royal Institute of Technology, Sweden.
- Bälter O. (1997a): *Epost i ett företag med flera system* (in Swedish). IPLab report 128, Nada, Royal Institute of Technology, Sweden.
- Bälter O. (1997b): *Organisation of email messages*. In proceedings of HCI'97, Bristol, United Kingdom, pp 21-38.
- Bälter O. (1998): *Electronic Mail in a Working Context*. Doctoral Thesis. ISBN 91-7170-345-4. Nada, Royal Institute of Technology, Sweden.
- Carlson S. (1951): *Executive Behaviour: A study of the Work Load and the Working Methods of Managing Directors*. Stockholm, Strömbergs.
- Darr E. (1996): "Australian Bureau of Statistics: Universal Adoption", in P. Lloyd and R. Whitehead (eds): *Transforming Organisations Through Groupware. Lotus Notes in Action*, Springer -Verlag Berlin, 1996, pp 70-79.
- Edlund C. (1990): *Chefers arbets- och livssituation*. (in Swedish) Arbetsmiljöfondens sammanfattningar 1383.
- Hessner L. (1993): *Ledare eller bara chef* (in Swedish), IHM Förlag AB, Göteborg, Sweden, ISBN 91-86460-49-8.
- Hiltz S.R. & Turoff M. (1985): *Structuring computer mediated communication systems to avoid information overload*. In Communications of the ACM. vol. 28, No. 7, (pp 680-689).
- Isherwood D. (1996): "Intel Corporation (UK) Ltd.: 10 Critical Success Factors for Notes Adoption", in P. Lloyd

- and R. Whitehead (eds): *Transforming Organisations Through Groupware. Lotus Notes in Action*, Springer - Verlag Berlin, 1996, pp 113-119.
- Kotter, J.P. (1982): *The General Managers*. New York, NY: Free Press.
- Kraut, R.M. & Galegher, J. (1990): Patterns of contact and communication in scientific research collaboration. In Galegher, J., Krauss, R.M. and Egido, C. (Eds.), *Intellectual Teamwork: social and technological foundations of cooperative work*, (pp. 149-171).
- Lantz A. (1995): "Tunga" användare av datorpost. (in Swedish) IPLab report 90. NADA 1995, Royal Institute of Technology, Stockholm, Sweden.
- Lantz A. (1996): "Heavy" Users of Electronic Mail; An Interview Study. IPLab report 101. NADA 1996, Royal Institute of Technology, Stockholm, Sweden.
- Lawrence P. (1984): *Management in Action*. Routledge & Kegan Paul. London.
- Luthans F. and Lockwood D. L. (1984): Toward an observation system for measuring leader behaviour in natural settings. in Hunt, Hosking, Schriesheim and Stewart (Eds.) *Leaders and Managers: International Perspectives on Managerial Behaviour and Leadership*. Pergamon, New York.
- Mackay W. (1988): *More Than Just a Communication System: Diversity in the use of Electronic Mail*. Proceedings of CSCW'88, pp 215-218.
- Maes P. (1996): Interview in Speakers Corner in ACM's "Communications", vol. 39, no 12, Dec. 1996. pp 25.
- Markus L. M: (1994a): *Finding a Happy Medium: Explaining the Negative Effects of Electronic Communication on Social Life at Work*. ACM Transaction on Information Systems, Vol. 12, No 2, April 1994, pp 119-149.
- Markus L. M: (1994b): *Electronic Mail as the Medium of Managerial Choice*. Organization Science, Vol. 5, No 4, November 1994, pp 502-527.
- McCall M. W. , Morrison A. M. and Hannan R. L. (1978): *Studies of Managerial Work: Results and Methods*, Technical Report no 9, Greensboro, NC, Center for Creative Leadership.
- Milewski A:E: & Lewis S.H. (1997): *Delegating to software agents*. International Journal of Human-Computer studies. No 46, pp 485-500.
- Miyata Y. and Norman D. (1986): Psychological Issues in Support of Multiple Activities, in *User Centered System Design – New perspectives on Human-Computer Interaction*, Norman D. and Draper S. (eds.) ISBN 0-89859-781-1, Lawrence Erlbaum Associates, Inc. Publishers, Hillsdale, New Jersey.
- O'Conaill B. & Frohlich D. (1995): *Timespace in the Workplace: Dealing with Interruptions*. Short paper in CHI'95 Conference Companion, Denver, Colorado, USA. pp 262-263.
- Palme J. (1995): *Electronic mail*, ISBN 0-89006-802-X. Artech House, Inc., Norwood, MA, USA, 1995.
- Rice R. & Bair J. (1984): New Organizational Media and Productivity. in Ronald E. Rice and Associates: *The New Media: Communication, Research, and Technology*. Newbury Park, CA: Sage Publications, pp 185-216.
- Severinson Eklundh K. 1996: *A dialogue perspective on electronic mail: implications for interface design*. In van Oostendorp and Sjaak de Mul (ed.) *Cognitive aspects of electronic text processing*. Ablex Publishing Company, Norwood, N.J., USA 1996, also IPLab report 75. NADA, KTH, Stockholm, Sweden.
- Sproull L. and Kiesler S. (1991): *Connections*. MIT Press, Cambridge, Mass, 1991.
- Stewart R. (1967): *Managers and Their Jobs*, Macmillan, London.
- Tollgerdt-Andersson I. (1995): *Chef i landsting: Ledarskap i politiskt styrda organisationer*. (in Swedish) Landstingsförbundet. ISBN 91-7188-237-5, Halmstad 1995.
- Whittaker S. and Sidner C. (1996): *Email overload: exploring personal information management of email*. Proceedings of CHI'96, pp 276-283.
- Wijn W. (1996): "GM Europe: World's Largest User of Notes", in P. Lloyd and R. Whitehead (eds): *Transforming Organisations Through Groupware. Lotus Notes in Action*, Springer -Verlag Berlin, 1996, pp 95-100.
- Wright P. (1996): *Managerial Leadership*. ISBN 0-415-11068-8, Routledge, New York 1996