

**Information Technology Users:
Studies of Self-efficacy and Creativity
among Swedish Newspaper Journalists**



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HANDELSHÖGSKOLAN I STOCKHOLM

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**Information Technology Users:
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Gudrun Balsvik



**STOCKHOLM SCHOOL
OF ECONOMICS**
HANDELSHÖGSKOLAN I STOCKHOLM

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Contents

1. INTRODUCTION	7
1.1 INFORMATION TECHNOLOGY USAGE AS A RESEARCH AREA	10
1.2 JOURNALISM AND IT- USAGE	11
1.3 Organization of the thesis.....	13
1.4 PURPOSE OF THE THESIS	12
2. LITERATURE REVIEW	15
2.1. INTRODUCTION	15
2.2 PERSON-ENVIRONMENT SYSTEMS	15
2.2.2 Human computer interaction – CHI	17
2.3 A PSYCHOLOGICAL FRAMEWORK	17
2.3.1 Social cognitive theory	18
2.3.2 General self-efficacy versus specific self-efficacy.....	20
2.3.3 Models of self-efficacy applied in research	21
2.3.4 Gender differences in self-efficacy	23
2.3.5 Age differences in self-efficacy.....	23
2.3.6 Computer self-efficacy	24
2.3.7 Self-efficacy & IT-usage	26
2.3.8 Definitions of self-efficacy.....	28
2.4 OTHER PSYCHOLOGICAL FACTORS OF RELEVANCE FOR IT-USAGE.....	29
2.4.1 Introduction.....	29
2.4.2 Attitudes.....	29
2.4.3 Interest	30
2.5 THEORETICAL PERSPECTIVES ON CREATIVITY	31
2.5.1 The four P's: personality, product, process and press	32
2.5.1.1 <i>The creative person</i>	32
2.5.1.2 <i>The creative product</i>	33
2.5.1.3 <i>The creative process</i>	33
2.5.1.4 <i>Environmental influence on creativity</i>	33
2.5.2 Creativity and IT-usage	35
2.5.3 Definitions of creativity.....	36
2.6 IS AND IT-USAGE	37
2.6.1 Negative consequences of IT-usage for the individual	39
2.6.2 Perspectives on human-systems interaction	39
2.6.3 Demographic factors and IT-usage	40
2.6.3.1 <i>Age</i>	40
2.6.3.2 <i>Gender</i>	40
2.6.3.3 <i>Computer skill</i>	41
2.6.3.4 <i>Computer experience</i>	41

2.6.3.5 Classifications of information technology applications.....	42
2.7 SUMMARY	43
3. RESEARCH APPROACH	44
3.1 INTRODUCTION	44
3.2 GENERAL RESEARCH APPROACH	44
3.2.1 Methodology.....	44
3.2.2 Level of analyses	47
3.3 RESEARCH DESIGN	49
3.3.1 Introduction.....	49
3.3.2 Research approach and design of studies 1 and 4	49
3.3.3 Research approach and design of studies 2 and 3	49
3.3.4 Limitations	50
3.4 CHOICES OF SAMPLE AND RESPONDENTS	53
3.5 THE MEASURES	53
3.5.1 Background variables	56
3.5.2. The dependent and independent variables.....	56
3.5.2.1 <i>Dependent variables</i>	56
3.5.2.2 <i>Independent variables</i>	58
3.6 PROCEDURE	60
3.6.1 Reliability and validity tests of the questionnaire	60
3.6.2 Method.....	61
3.6.2.1 <i>Focus group</i>	61
3.6.2.2 <i>Factor analyses</i>	61
3.6.2.3 <i>Data analyses in studies 2 and 3</i>	62
3.6.2.4 <i>Data analyses in studies 1 and 4</i>	62
3.6.3 Using self-reported data.....	63
4. STUDY 1. JOURNALISTS' ATTITUDE TOWARDS AND USAGE OF ELECTRONIC NETWORK	64
4.1 INTRODUCTION	64
4.1.1 Participants	64
4.1.2 Method.....	64
4.1.3 Procedure	65
4.2. RESULT	65
4.2.1 How do journalists use Internet at work today?	65
4.2.2 Ways of communicating and collaborating.....	66
4.2.3 Sharing communication and information	66
4.2.4 Internet can be a cause of difficulties with criticism of the origins	66
4.2.5 E-mail as a tool for in making new contacts	67
4.2.6 The chosen strategies of learning how to use Internet	67
4.2.7 What has been learnt by the use of Internet in the journalistic profession?	67
4.2.8 From information towards relation.....	68

4.2.9 Internet has changed one's view of the reader.....69

4.2.10 Developing the professional skill?69

4.2.11 Internet as control of journalistic work70

4.3 CONCLUSION.....70

5. STUDY 2. JOURNALISTS AS IT-USERS: GENERAL VERSUS SPECIFIC MEASURES OF SELF-EFFICACY AND ATTITUDES..... 73

5.1 INTRODUCTION73

5.1.1 Hypotheses.....73

5.1.2 Sample74

5.1.3 Procedure74

5.2 THE SURVEY.....74

5.2.1 Development of questionnaire.....74

5.2.2 Indices.....75

5.3 DESCRIPTIVE RESULT79

5.4 MULTIPLE REGRESSION ANALYSES.....81

5.4.1 Background variables83

5.4.2 Attitudes.....84

5.4.3 Efficacy beliefs.....85

5.4.4 IT-usage at work.....85

5.4.5 Usage of communication channels.....88

5.4.6 Perceptions of the effect of IT on communication.....89

5.4.7 A combined model with attitudes, self-efficacy, and interest91

5.4.8 Regression models on perceptions of impact of IT impact on communication91

5.4.9 Regression models on usage of communication channels92

5.4.10 Regression models on IT-usage at work92

5.5 EXAMINING THE HYPOTHESES93

5.5.1 Hypothesis 1: Specific self-efficacy, IT-usage and communication.....93

5.5.2 Hypothesis 2: Specific self-efficacy versus general self-efficacy.....93

5.5.3 Hypothesis 3: Gender differences in self-efficacy93

5.5.4 Hypothesis 4: Low versus high efficacy beliefs.....94

5.5.4.1 *Computer self-efficacy*.....94

5.5.4.2 *Intranet self-efficacy*.....94

5.5.4.3 *Internet self-efficacy*.....95

5.5.4.4 *Group differences*95

5.6 SUMMARY OF MAIN FINDINGS96

5.6.1 Perceptions of effects of IT on communication at work96

5.6.2 Usage of communication channels at work.....96

5.6.3 IT-usage at work.....97

5.6.4 Attitudes.....97

5.6.5 Self-efficacy and IT-related work99

5.6.6 Interest99

5.6.7 Gender differences.....	100
5.6.8 IT-related work among journalists	100
6. STUDY 3. CAN IT SUPPORT CREATIVITY?	102
6.1 INTRODUCTION	102
6.1.1 Participants	102
6.1.2 Procedure	102
6.1.3 Questionnaire and scales	103
6.2 INDICES	105
6.3 DESCRIPTIVE RESULT	108
6.4 RELATIONSHIPS BETWEEN VARIABLES	110
6.5 GROUP COMPARISONS	110
6.6 MULTIPLE REGRESSION ANALYSES.....	113
6.6.1 Self-efficacy and creativity.....	113
6.6.2 IT-usage and creativity	114
6.7 DISCUSSION	115
6.7.1 Efficacy beliefs and creativity	115
6.7.2 Experience, IT-usage, interest and creativity	115
6.7.3 Exploring perceived creativity	116
6.7.4 IT-usage and creativity	116
6.8 CONCLUSION.....	117
7. STUDY 4. INFORMATION TECHNOLOGY: JUST ANOTHER WORK TOOL OR SUPPORT OF CREATIVITY?	119
7.1 INTRODUCTION	119
7.2 PARTICIPANTS AND PROCEDURE.....	119
7.2.1 Participants	119
7.2.2 Procedure	120
7.3 INTERVIEW QUESTIONS	121
7.4 RESULT & DISCUSSION	121
7.4.1 The creative process	121
7.4.1.1 <i>A detective work: Interest & curiosity</i>	122
7.4.1.2 <i>The ability to experience flow</i>	123
7.4.1.3 <i>The ability to be politically incorrect</i>	123
7.4.1.4 <i>The ability to sift information</i>	124
7.4.2 Work and social conditions for a creative process	124
7.4.2.1 <i>Interpersonal relationships</i>	124
7.4.2.2 <i>Cooperation across departments: a journalistic revolution?</i>	125
7.4.2.3 <i>The informal meeting</i>	125
7.4.2.4 <i>Leadership as support of creative performance</i>	126
7.4.2.5 <i>Deadlines as a force for creativity</i>	127
7.4.2.6 <i>Conditions that hinder the creative process</i>	127
7.4.2.7 <i>Linguistic creativity</i>	128
7.4.3 Information technologies as work tools & channels for creativity	129

7.4.3.1 Internet as an analytic tool.....	129
7.4.3.2 Internet and the control of the original sources.....	130
7.4.3.3 IT- usage & experiences of stress.....	131
7.4.3.4 Information technologies ease the routines & save time	132
7.4.3.5 IT-competence and age of user.....	133
7.4.3.6 E-mail and Internet as channels for ideas and tips.....	134
7.4.3.7 E-mail – a non-transparent communication tool	135
7.4.3.8 IT and the journalistic gatekeeper role	137
7.5 CONCLUSION.....	138
7.5.1 What are the most significant elements of the genre of journalistic creativity?	138
7.5.2 What conditions at work may, according to the respondents, support or prevent journalistic creativity?	138
7.5.3 Is information technology of importance to journalistic creativity and in what manner?	138
8. GENERAL DISCUSSION OF THE STUDIES.....	140
8.1 INTRODUCTION	140
8.2 SUMMARY OF THE FINDINGS	140
8.2.1 Study 1. Journalists' attitudes towards the usage of electronic networks at work.....	140
8.2.2 Study 2. Journalists as IT-users: General versus specific measures of self-efficacy and attitude.....	141
8.2.3 Study 3. Can IT support your perceived creativity?.....	142
8.2.4 Study 4. Information technology usage and creativity.....	143
8.3. AN INTEGRATED DISCUSSION OF THE MAIN FINDINGS.....	144
8.3.1 How IT is used by journalists.....	145
8.3.1.1 Internet as a an infrastructure of efficient work	145
8.3.1.2 Positive and negative aspects of Internet usage.....	145
8.3.2 Why IT is used by journalists.....	146
8.3.3 Perceptions of effects of IT on communication at work	146
8.3.3.1 Attitudes towards IT.....	146
8.3.3.2 Self- efficacy beliefs and IT-usage.....	147
8.3.3.3 Interest.....	147
8.3.4 IT-usage & Creativity	148
8.3.4.1 Experience	148
8.3.4.2 The two-directed role of self-efficacy.....	149
8.3.4.3 IT-usage: ingredient of two kinds of creativity?	150
8.4 RESEARCH IMPLICATIONS	151
8.5 IMPLICATIONS FOR PRACTITIONERS AND ORGANIZATIONS	151
8.6 CONCLUSION.....	152
8.7 CONTRIBUTION	152
8.8 FUTURE RESEARCH.....	153

9. APPENDIX.....155

9.1. APPENDIX A – THE JOURNALISTIC PROFESSION..... 155

9.1.1 Parallel publishing & the multimedia news reporter..... 155

9.1.2 The journalistic work process.....156

9.1.3 Attitudes towards IT among journalists 157

9.1.4 Information mediating journalists 158

9.1.5 Journalism in the future159

9.2 APPENDIX B. THE MEASUREMENT INSTRUMENTS..... 160

9.2.1 Work- related IT-usage..... 160

9.3. APPENDIX C. INTERVIEW GUIDE. STUDY 1. 164

9.4 APPENDIX D. INTERVIEW GUIDE. STUDY 4. 166

10. REFERENCES168

1. INTRODUCTION

Information technology (IT) tools (i.e. Internet, e-mail, and intranets) are common at work sites today. These new tools have changed the ways of collaborating and communicating in several occupations. It is a fact that the recent rapid development of IT has changed work procedures in many occupations during the second half of the 90's, causing employees to adapt to new circumstances at work. These changes and the development of IT-maturity look different in different kinds of occupations. Therefore, it is of interest to investigate IT as a phenomenon in a specific occupational context.

In the present thesis the focus is on how IT tools are used among *journalists*, since journalistic work to a great deal includes information handling, e.g. by IT. Journalistic IT-usage is interesting to study from two perspectives: first, journalists are more IT-dependent than many other occupational groups. Second, they are not only *users* of the information obtained via IT (e.g. collecting and analyzing information); they are also *responsible for the creation and delivery* of information via IT.

A common way of performing journalistic research is to link and match several computer databases. Internet is undoubtedly an integrated part of journalistic work tasks and procedures. Regarding e-mail, a common type of usage among journalists is an organized discussion list. By subscribing to a certain discussion list it is possible for the journalist to exchange tips and discuss specific subjects with other colleagues. E-mail in the form of newsletters and press releases are also important sources of journalistic articles.

Work procedures, work roles, and organizational strategies play a role when IT is implemented. Furthermore, Internet has an impact on interpersonal relationships and social involvement at work as elsewhere.

To fully understand both the positive and negative effects of Internet - i.e. the way Internet may displace both conventional social activities and strong ties between people and function as a substitute for the 'real' world - more research is needed. Another reason for additional research is that changes due to the development of technologies have and still are mechanizing many work tasks and activities that were previously done manually. Such thorough changes have increased the computerized work-tasks and enabled collaborative communication via IT. Due to the fact that technologies have changed and will continue to change work conditions, new studies are called for in order to increase the knowledge of factors that might influence employees' work through IT tools. This line of argumentation raises the question of how individuals with different capabilities handle increased complexity in technological work tasks.

Which are the psychological factors of relevance for an efficient and smooth usage of IT at work? Knowledge about individual hindrances to and supporting factors of efficient IT-usage is sparse. Nor do we know all about how the immediate environment might affect the human-technology interaction. In addition, the factors of relevance to IT-usage might also be different in diverse kinds of occupations and organizations.

Problems that may arise in technical environments are not always due to purely technical matters. The problems might be caused by neglect of the technological influences on work environments but also by psychological factors. Such factors that might have an influence on IT-usage at work are the degree of employees' *skill* and *interest* in handling IT. Skill in handling computers seems to be important to one's attitude towards computers. Furthermore, studies have revealed that interest in IT is related to attitudes towards IT. These relationships are interesting because conventionally attitudes are suggested to affect behavior (see authorities on research on attitudes, e.g. Oskamp or Fischbein & Ajzen).

There are also other psychological factors that seem to be related to IT-usage. Among them is *self-efficacy*, i.e. the degree of confidence an individual has in her capability to perform a certain task. For example, it has been shown that individuals who doubt their efficacy to conduct productive inquiries and to manage electronic technology quickly become overwhelmed by the information overload (for a thorough presentation of the discussed psychological constructs in this chapter, see chapter 2, Literature Review). The question is if *perceived confidence* has an impact on *how* individuals *choose* to use Internet, intranet and e-mail. If the answer is positive, the subsequent question is how to enhance and support individuals with too low IT-related efficacy beliefs. Or, alternatively, we might consider whether too high a level of efficacy belief hinders efficient IT-usage.

The claim made here is that the employees' efficacy beliefs are fundamental to the organization, since organizations are dependent on employees and managers to reach desired business and productivity goals. IT-tools such as Internet, e-mail, and intranet require certain end-user skills. Skills, in turn, might be affected by efficacy beliefs, since, theoretically, a skill with regards to a task may be different from the confidence an individual has regarding the same task. Individuals can, objectively, be perfectly skilled with regards to a certain task but might, at the same time, subjectively doubt their own skill. Information technologies are not always that easy to use and not every individual feels comfortable using IT, which is something that most certainly affects efficiency, but also - in the long run- well-being at work. Research indicates that during technological transformation, individuals with high efficacy beliefs in handling IT are more satisfied with their work, more committed to change and perform

better (see chapter 2). On the other hand, individuals with low efficacy beliefs resist adopting new technologies. As a consequence of the discussion put forward here, the *connection between self-efficacy and IT-usage* is a main topic in the present thesis work.

The need for IT-literacy and confidence in handling IT can be discussed from yet another perspective. What are the possible outcomes and profits of a highly IT-skilled work force? It is suggested (Bandura, 2001) that the development of Internet literacy should be given high priority. Individuals with high efficacy beliefs and prominent skills in IT-related work tasks are probably more likely to reassure the productivity and innovativeness of an organization than individuals low in work efficacy.

Few studies, if any, have examined the role of IT for work-related outcomes, for example, whether IT does support or impede productive and efficient work. In order to perform such studies, work-related outcomes can be defined in several and distinctively different ways, two of which are *efficiency* and *productivity*. Effects of technology often include planned efficiency and productivity calculations.

Quite another possible work-related outcome is *creativity*, i.e. *the ability to produce new ideas or products*. It is possible to assume that one can be productive at the expense of producing creative accomplishments. For example, individuals might be productive at work without necessarily being creative at the same time. Still, a relation between productivity and creativity might exist. Tight time schedules, low support from managers, and scarce economic resources are examples of factors that research suggests might prevent creative performance at work (see a comprehensive discussion about creativity in chapter 2). Time for reflection, good enough qualities and quantities of organizational resources, and managerial support, are often put forward as enhancing factors of creativity. One aim of this thesis is to investigate whether IT, as perceived by journalists, is an impediment to or a support of journalistic creativity.

When trying to understand the influence of psychological factors on IT-usage, we may ask what consequences low IT-skill and low confidence in handling the technologies might have on work productivity. Journalists are often assumed to have a certain degree of creative skill. The question is whether *IT as a work tool can support or impede creative accomplishments* among journalists.

In line with the discussion about IT-usage and work outcomes, the relationship between *IT-usage and creativity* is the second main issue of investigative interest for the present thesis.

1.1 INFORMATION TECHNOLOGY USAGE AS A RESEARCH AREA

Why study IT-usage? A lot of research is done in the area and contributions are made in different scientific disciplines: economy, computer science, psychology, social anthropology, and more. Still, despite efforts by researchers in many of the sub-disciplines – as human computer interaction (HCI), computer-supported collaborative work (CSCW), and humanistic information technology (HIT) – knowledge about the IT-users is far from complete.

Among Swedish politicians there was an intention, during the 90's, to support private industry and public organizations in developing business activities and professional skills in IT (see for instance IT 2000, DS 1991:63). In order to use IT in an efficient way in organizations we need to make a distinction between productivity and efficiency. Efficiency is related to the goal of the organizational activities, whereas productivity is a term that expresses an intention to make things 'the correct way'. The question of concern here is how it is possible to use IT 'the right way' in order to achieve both efficiency and productivity in working life. In order to answer this question we need to know the factors that might contribute to efficient IT-usage in different work contexts. Are, for example, new technologies increasing or decreasing the psychological demands at work for the individual? In order to develop individual achievements and competencies, there must be adequate resources available. Information technology is such a resource at work. Productivity and efficiency can then be viewed as human performance x resources (Aronsson & Johansson, 1991).

When trying to understand the influence of IT on human behavior, one problem seems to be that computer scientists have a tendency to overestimate the value of technology. The encounter between the individual and technology may indeed cause unexpected problems. This has been the topic of interest in much research. Some researchers look at the differences between IT and 'real life', whereas others focus on how the individual adapts technology to his own conditions. According to the *socio-technical perspective*, new technology interacts with social conditions in a spiral interaction, where technology demands new social solutions, which in turn can be solved technically. In this perspective, both the technology and the individual should (and must!) be taken into consideration when performing studies in the area.

The purpose of the present dissertation is to investigate possible antecedents of IT in a socio-technical perspective, but also how IT is related to creativity. The assumption, in line with theories of *human-environment interaction* (see chapter 2), is that there exists an interaction between technology and the human being. People in working life will use and adapt technology to their own work situations and to organizational policies. However, technologies also require

new ways of working, of communicating, and of cooperating. In my view, it is possible to talk about the effects both of IT-usage on human behavior and of human and organizational factors on the development of IT.

1.2 JOURNALISM AND IT-USAGE

Technological changes have always created both great challenges and great opportunities in news media. As mentioned earlier, journalist professionals are a group whose work has been deeply affected by new information technologies such as Internet, IT being heavily integrated in journalistic work procedures. In the 80's, before Internet, e-mail, and intranets were introduced at newspaper work offices, external databases were commonly used among journalists. The main usefulness of these databases, as expressed by journalists, was the possibility of finding important background material for articles. Today, the journalistic work is performed differently due to new technologies. Internet, e-mail, and the development towards multimedia newspaper offices have changed and possibly will continue to change journalistic work procedures. Internet offers new possibilities for journalists and it is up to the individual journalist whether Internet will improve or deteriorate journalism in the future. Much depends on the IT-maturity of the organization, but also on the degree of IT-skills and confidence in handling IT among the employees.

Journalistic work is a profession that indeed requires both a certain level of creativity and productivity. Moreover, to a high degree modern journalism has developed along with the development of IT (see Appendix 9.1 A). The traditional role of journalists as gatekeepers and deliverers of news and information to the public has become even more pronounced. The question is whether IT has become a support of or an impediment to journalistic work and creativity – or both. IT-usage is today a natural part of journalistic information acquisition and the rapid news production forces the journalist to choose the most convenient information strategy. Specified time limits for news delivery and a given amount of space require an ability to sift information. Furthermore, information ownership may in itself be a source of power to the journalist, why excellent skills in handling IT and information via IT are desired.

The present section has outlined some general research questions which are in focus in the thesis. In chapter 2, the Literature review, more specified research questions will be presented.

1.3 ORGANIZATION OF THE THESIS

This chapter has introduced the research topics for the current thesis work: IT-usage, journalistic work and IT, and the roles of self-efficacy and creativity. At the end of this chapter the purpose and aim of the thesis will be stated.

Chapter 2 presents the theoretical bases and literature review of relevance for the thesis work. The same chapter also contains definitions of the main concepts being used.

In chapter 3 the research topics for the general method, procedures, and IT, and the research are discussed. Two interview studies and two survey studies are reported in the thesis. The design of the studies is described in this chapter, e.g. it contains descriptions of the participants, procedures, questionnaires, scales, and indices in the four studies.

Chapters 4, 5, 6 and 7 present short introductions to the studies, respectively. The results and conclusions are presented for each study. In chapter 8, summaries and findings of each study are presented. Furthermore, an integrated discussion including conclusions of the results from the four studies is given. In addition, further research is suggested. Chapter 9 contains appendices and the references appear in chapter 10.

1.4 PURPOSE OF THE THESIS

The thesis is expected to contribute new knowledge about the connections between three phenomena among news journalists in Sweden: their self-efficacy, creativity and IT-usage. The relationships between these aspects of interest are not necessarily of the same dignity in all kinds of professions. However, it is argued here that among journalists, word processing through computers, information gathering via IT as well as creativity, are especially important constituents of journalistic professional work.

Even though there have been some research efforts regarding psychological factors of importance related to IT-usage, there is less research on the connection between individual beliefs of IT capabilities, IT-usage, and creative work accomplishments. This thesis aims to fill this research gap. The objectives of the thesis project and its four studies are presented below.

1. The first objective is to *explore psychological factors' influence on how, when and why IT is used at work*. The independent variables chosen are selected on

the basis of the framework of Social cognitive theory¹. In particular, the investigations aim to examine *the role of self-efficacy in IT-usage* among news journalists. The question is examined in all four studies performed.

1a. In connection with the first objective, it is also investigated whether *specific measures of self-efficacy* could be considered as more valid assessments than measures of *general self-efficacy*. The question is examined in Studies 2 and 3.

2. The second objective is to examine *the relationship between IT-usage and creativity*. The question is examined in Studies 3 and 4. The aim is not to produce general research conclusions. Rather, the examinations are limited to this specific work context: news journalism.

2a. In relation to the second objective, a specific question of investigative interest is *whether IT-technologies are perceived as a support or an obstacle by journalistic professionals*. What are the attitudes of newspaper journalists towards IT in terms of the technology as a possible tool for collaboration, communication, and personal competence development? The question is examined in Studies 1, 2 and 3.

2b. Another part of the second objective is to examine if there is a connection between *the degree of individual self-confidence in IT-related skills and creative work performance* among journalists. The question is examined in Study 3.

The outline of the four studies carried out in order to achieve the objectives was based on an integrating conceptual research model (see Figure 5 in chapter 3, p. 48). The studies were designed according to the following description (see also Figure 1, p. 14):

- **Study 1** is an exploratory interview study and includes qualitative data analyses. It aimed at contributing to the questions asked in the subsequent studies. It also aimed at giving a ground for the interpretation of the conceptual research model.
- **Study 2** is a survey and includes quantitative data analyses. In this study attitudes, efficacy beliefs, work interest, and IT competence were defined as independent variables in an analysis of explained variance in IT-usage and communication at work (dependent variables). Further, the study explicitly investigated the conceptual model.
- **Study 3** is also a survey with quantitative data analyses. In the study efficacy beliefs, work interest, IT competence, IT-usage and communication at work were independent variables, and creativity was the dependent variable. As

¹ The theory is also called Social learning theory; see the work of Bandura, described more in detail in chapter 2.

with the second study, Study 3 aimed at explicitly examining the conceptual research model.

- With **Study 4**, further examinations of the results obtained from the earlier studies were conducted. It was designed as an interview study and the data was analyzed with qualitative data methods. It mainly aimed at clarifying the interpretations of the relationships between IT-usage and creativity obtained in Study 3.

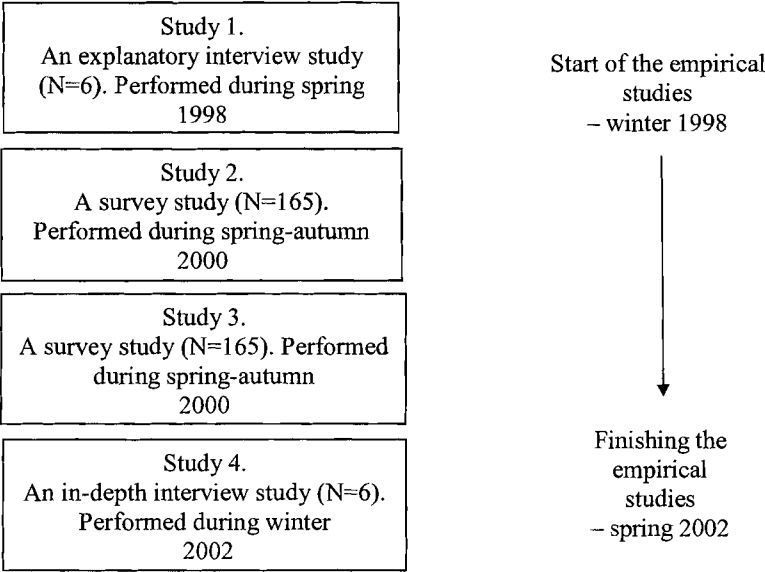


Figure 1. The research process and design of the four studies.

2. LITERATURE REVIEW

2.1. INTRODUCTION

The present chapter will outline findings from a thorough literature review relevant for the four areas in focus of the present thesis: psychological theory and psychological factors of relevance for studies of IT-usage (e.g. self-efficacy), creativity, IT-usage and journalistic work. The chapter starts up with a review of research traditions in the human-technology interaction field (for a thorough review of the development in the human-technology interaction field, see for instance Waern, 1998).

2.2 PERSON-ENVIRONMENT SYSTEMS

In psychological research, the person is viewed according to different perspectives on *person-environment systems* (for a thorough review of the theoretical literature on person-context interaction in a psychological perspective, see Magnusson & Stattin, 1996). According to the *mediating mental system view*, the individual's internal life and her/his interchange with the external world in apparent behavior, depend on the functioning of the integrated perceptual-cognitive-emotional system, including self-perceptions and worldviews. In a contemporary perspective, self-perceptions (displayed in feelings of self-efficacy, self-esteem, and a sense of competence) direct the selection and interpretation of information from the environment. The individual can choose to engage in certain activities rather than others due to feelings of self-efficacy and motivation.

As psychological research suggests there is an optimal level of environmental stimulation for the individual. Either too much or too little stimulation will result in less satisfaction and less adequate development than what will occur with intermediate stimulation.

As a consequence of the circumstances described above, society and organizations need to consider IT and the connection between technology and factors such as employee education, productivity, health, and social factors, with the aim of getting an ultimate adjustment between IT systems and work-related demands for the individual. Information technologies put new demands, such as flexibility, learning, cognitive functioning, communication, cooperation and information retrieval, on the individual. This is especially significant for journalists because of their built-in professional role as gatekeepers of analytic information delivery. Modern work conditions require that the individual define, plan and conduct work on her own, since external bounds as regulated work times, work schedules and employment agreements are more or less substituted

by subjective and individual regulations (Allwin, et al., 1998; Allwin, Wiklund, Hårenstam, & Aronsson, 1999). In addition, knowledge of individual as well as organizational/environmental antecedents of IT-usage is one important strategy to reach such a desired adjustment between the individual and the context, in this case information technology.

Computer supported cooperative work – CSCW

As described earlier, the research area ‘Computer-supported cooperative work’ (CSCW) developed in parallel to the Human computer interaction area during the 90’s. One alignment of CSCW is to support cooperation with computers, another to describe how people’s work determines their work situation. Work sociologists and anthropologists are dominating the field, using mostly ethnographic methods. Researchers in CSCW view work as both situation- and social-dependent. In the CSCW perspective, the colleagues, the values of the organization, and a constantly changing work situation are factors that in particular influence the individual to construct her work reality.

One noticeable difference between CSCW and the cognitive psychology approach is that the CSCW researcher puts the human being more in focus than the classic cognitive psychologist. The problem is that new technologies, or group-ware applications, will never give each individual precisely the same benefit; it will definitely pose greater demands on some individuals than on others.

Humanistic Information Technology – HIT

A research view with an even more pronounced human-context focus is Human Information Technology (HIT), which was introduced in chapter 1. Within the HIT research area, the main interest is to study how the artifact (i.e. the computer interface) can be adjusted to human conditions (social, knowledge, and physical conditions) and to the purpose of the usage of technology. The aim is to study human cooperation in dynamic situations and systems through communication and creation of artifacts.

More recent research approaches that have more or less replaced the pure traditional cognitive psychological approach in research on human-system interaction have been discussed in the current section. Next, a psychological framework suited for IT-studies is suggested.

Cognitive psychology

Cognitive psychology has traditionally had a great impact on research in Human computer interaction (HCI). Cognitive psychology is concerned with how we think and learn, and how we process and use information about our world (for a thorough review, see for instance Anderson, 1996, or Lundh, Montgomery, &

Waern, 1992). According to cognitive psychology, humans are rational beings, driven by goals and intentions. This rather mechanistic view holds the assumption that we follow rules without considering human emotions or social interactions. The focus is on mental processes and knowledge has been seen as something objective.

Criticism is directed towards cognitive psychology regarding the lack of consideration of emotional, affective, and non-rational aspects of human behavior (Sjöberg, 1998; Kirschner & Whitson, 1997). The criticism requires a theory or research perspective that integrates personal, cognitive, and social factors of human activities.

2.2.2 Human computer interaction – HCI

During the 90's criticism was leveled against cognitive psychologists working in the area of human-computer interaction. The critics argued that knowledge about the thinking of one individual was not enough to fully understand the interaction between the human being and the computer. Neither is it enough to develop computers that suit human needs. Design was in focus at the time and consequently the individual's role was neglected in the development of information technology. The computer interface was at the center of attention of the research. Simultaneously to HCI, the research area "Computer Supported Cooperative Work" (CSCW) developed.

The criticism described before requires a theory or a research approach that integrates personal, cognitive, and social factors of human activities. Social cognitive theory may offer such a perspective. Therefore, Social cognitive theory is chosen as the theoretical framework in the present thesis.

2.3 A PSYCHOLOGICAL FRAMEWORK

Self-efficacy has, as described in chapter 1, been investigated in studies of work performance. Among other variables, self-efficacy as a psychological construct has been tested in empirical research in different areas such as learning, school achievement, research, alcohol addiction, sports, and computer/information technology usage.

Several large-scale meta-analyses involving diverse populations, across diverse functioning at both the individual and collective level, support the connection between self-efficacy beliefs and the quality of human functioning, including work-related performance (Stajkovic & Luthans, 1998a, 1998b; Gist, 1987; Holden, Moncher, Schinke, & Barker, 1990; Moritz, Feltz, Fährbach, & Mack, 2000; Pinquart, Juang, & Silbereisen, 2003; Robertson & Sadri, 1993). These

analyses indicate that individuals with high self-efficacy beliefs perform better than individuals with low self-efficacy perceptions, for example, in research productivity. Of particular interest to the present thesis is that some studies report significant correlations between level of individual self-efficacy and performance with regard to computer/technology tasks (Compeau & Higgins, 1995; Compeau, Higgins, & Huff, 1999; Marakas, Mun, & Johnson, 1998).

A specific meta-analysis of all organizational behavior modification studies performed in twenty years in all types of organizations showed that on average, human performance increased by 17 percent through attempts to improve human work performance by including self-efficacy in the analysis (Stajkovic & Luthans, 1998a). The authors claim that self-efficacy often is confused with the cognitive-motivational model containing effort-performance and behavior-outcome. This is an important finding since it has often been claimed to be difficult to predict objective behavioral outcomes from self-reports.

Why study self-efficacy if the concept is established and the relationship to work already exists? An obvious reason is that individuals' estimates of self-efficacy may be different in real work settings than in laboratory settings, because individuals have to consider other performance constraints that are not present in a simulated environment. These constraints include the amount of available resources, physical distractions, and the interdependence of the particular task with other functions in the organization, among other things.

To sum up, on the basis of the literature review, the standpoint in this thesis is that self-efficacy actually may be a better predictor of work-related behavior than many of the other personality trait constructs that are used in research of this type.

2.3.1 Social cognitive theory

Bandura introduced the theoretical basis to the self-efficacy construct in Social cognitive theory. According to Social cognitive theory, individual learning includes both cognitive and emotional components. Learning is assumed to include an interaction between the human being and her environment. These processes are described more in detail by Bandura (for a thorough description of Social cognitive theory and empirical studies of self-efficacy, see Bandura, 1977a; 1977b, 1982, 1986, 1989, 1991, 1997, 1999a, 1999b, 2002; Bandura, & Schunk, 1981; Debowski, Wood, & Bandura, 2001). On the basis of the empirical and theoretical qualities of Social cognitive theory, Bandura's work is the main inspiration of the present thesis.

One important aspect of Social cognitive theory is how people foster their own behavior by noticing the outcomes of their actions. Individuals develop meanings about which responses are the most appropriate ones in different situations. By observing other people, the individual can use this information as a future guide of action. This consideration can have consequences for the implementation of new technologies, when deciding the best way of learning to handle new applications.

The cognitively-based work motivation, equity, and expectancy theories are claimed to be insufficient for explaining differences in individual behavior in work settings, because they often fail to specify the underlying factors that can affect the strength between human action and environmental outcomes (Stajkovic & Luthans, 1998a; 1998b). Therefore, the point of departure here is that Social cognitive theory can offer a more adequate base of understanding of the reciprocal relationship between human beings, at the same time both products and producers of their personality, their behaviors and their respective environments.

Self-efficacy is assumed to involve a large domain of perceptions, such as knowledge, skills, task experience, state of affective and psychomotor reactions (i.e. emotions, stress, and fatigue), and personal ability. Moreover, self-efficacy includes a capability to generalize to other people and situations and areas. In principle there is a distinction between *efficacy* and *outcome expectations*. Efficacy precedes behavior outcome expectation. An efficacy expectation is an evaluation of an individual's ability to perform a certain behavior. An outcome expectation is an evaluation of possible consequences of the behavior.

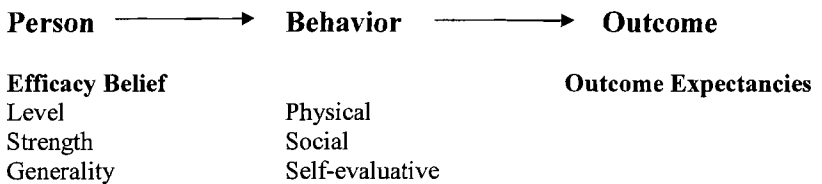


Figure 2. The conditional relationships between efficacy beliefs and outcome expectancies. (After Bandura 1997, p. 22).

A belief about *whether* one is capable of a successful performance of certain tasks (perceived self-efficacy) is not the same as a belief about *how* performances affect outcomes. According to Social cognitive theory, perceived self-efficacy is an evaluation of one's *ability* to organize and perform certain actions, whereas an outcome expectation is an evaluation of the *possible consequences* in which the same performances will result.

According to Bandura's model the self-efficacy construct embraces several dimensions. Three specific dimensions are suggested. In relation to the work area, these dimensions can be summarized as follows:

- *Magnitude* - The level of task difficulty and complexity (low - moderate - high) an employee believes he or she can accomplish. Levels of task difficulty and complexity represent different degrees of challenge for successful task accomplishments.
- *Strength* - How certain an employee is about performing at the level of task difficulty and complexity indicated by magnitude of self-efficacy. The higher the strength of self-efficacy, the higher the likelihood of successful performance.
- *Generality* – Personal efficaciousness is generalized across similar activity domains. They can vary on domains in which ability is expressed (behavioral and cognitive).

In order to measure self-efficacy, it is necessary to distinguish between general and specific self-efficacy, an issue that will be discussed in the following section.

2.3.2 General self-efficacy versus specific self-efficacy

It is important to measure self-efficacy in a specific and well-defined domain, since individual self-efficacy is not a context-less global disposition that can be measured by an omnibus test. The reason is that the explanatory power of sensitive predictors is lost when conglomerate global measures of human functioning are used. Furthermore, global measures of self-efficacy might have weaker predictive and explanatory value than more precise measures.

General self-efficacy both reflects an individual's perception of her ability to perform a task based on past experience, and influences future intentions. According to Social cognitive theory, efficacy beliefs can vary across situations and activities, and therefore a global disposition is not possible to measure by an omnibus test. Still, there is an ongoing debate among scholars about whether it is appropriate to use general self-efficacy or task-specific self-efficacy measures, an issue that should be considered in studies of efficacy beliefs. Consequently, measures of both specific and general efficacy beliefs have been used in the current studies. Some theoretical models, based on Social cognitive theory and self-efficacy, have been tested empirically and will be presented next.

2.3.3 Models of self-efficacy applied in research

As described earlier, some specific theoretical models with connections to Social cognitive theory have been developed and investigated empirically. The Technology acceptance model (TAM, see Figure 3, below), which explicitly incorporates self-efficacy and its determinants (experience and organizational support) as variables affecting computer anxiety, perceived ease of use, perceived usefulness, and the use of computers, is such a model (see Igbaria & Iivari, 1995). The principal base of the model is a combination of Fischbein and Ajzen's Theory of reasoned action (TRA), Ajzen's theory of planned behavior (TBP), and Davis et al's. Technology acceptance model (TAM). A more recent finding indicate that experience with computer programming and graphics applications have strong and significant effects on computer self-efficacy beliefs, whereas experience with spreadsheet and database applications demonstrated weak effects (Hasan, 2003).

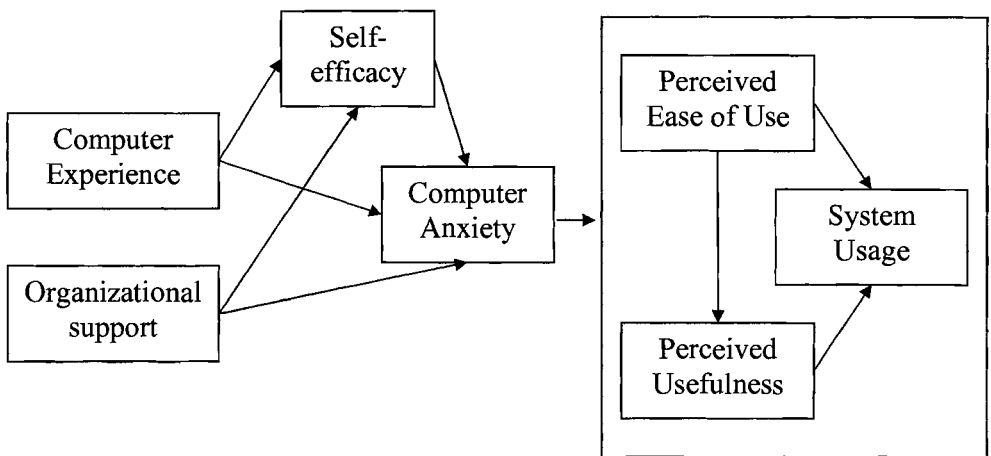


Figure 3. The determinants and consequences of self-efficacy: A computer usage model (Adapted from Igbaria and Iivari, 1995, p. 590).

Empirical tests of the TAM-model show which of the included variables had a significant effect on usage (Cheunga, Changb, & Laia, 2000; Gist, Schwoerer, & Rosen, 1989). The findings show that individuals with high self-efficacy beliefs used computers more, got more usefulness from their computer usage, and evaluated management support higher. The results emphasize the importance of both self-efficacy and external variables on computer usage. Moreover, other

findings indicate that that application-specific self-efficacy has a direct and powerful effect on actual use over and above user intention to use the system (Yi & Hwang, 2003). The TAM model also emphasizes individual differences, since *levels* of self-efficacy are taken into account.

Self-efficacy should not be confused with other similar constructs, such as the self-concept. Self-concept is one of the oldest researched phenomena in the social sciences. The concept of self deals with how people view themselves (measured as attitudes) and the consequences of these attitudes on people's life perceptions. It is an *individual's perception of self*, and it is formed through interaction with other people, through experience with the environment, and attributions of one's own behavior. The measure of self-concept is handled by letting individuals rate how well statements of several attributes apply to themselves.

Some claim that the predictive effect of the self-concept of behavior is weaker than the predictive power of self-efficacy, because the self-concept loses almost all predictiveness when perceived self-efficacy is taken into account (Pajares & Kranzler, 1995; Pajares & Miller, 1994). The argument is that the self-concept is actually only an indication of individual self-efficacy beliefs. Another argument put forward against the self-concept is that research on self-concept often lacks either a theoretical basis for the study or measurement sophistication (Marsh, Smith, Barnes, & Butler, 1983).

The distinction between the construct of self-concept and the self-efficacy construct is somewhat vague and a clarification should be made. In principle, the general self-concept includes all dimensions of a person's life. This is contrary to self-efficacy, which is the person's conviction about a *task- and context-specific capability*. The self-concept construct has also been treated in the same way as self-esteem, which integrates an individual's perceptions of his/her own ability. Self-efficacy and self-esteem are actually two different constructs, referring to different things. Whereas self-esteem is an evaluation of *self worth*, self-efficacy is concerned with evaluations of individual *capability*. Individuals need more than high self-esteem in order to perform well in a given domain. Individuals can regard themselves efficacious in an activity but may not take pride in their own performance.

The difference between the constructs is also related to *the domain* that they cover. Self-efficacy is the person's conviction about a task- and context specific capability, whereas self-esteem is often referred to as a global construct that covers a *person's self evaluations* across a variety of different situations (Bandura, 1977). An example of the distinction between the types of construct is a study among women in which it was tested whether perceived importance of

task-relevant abilities would moderate the relationship between global self-esteem and task-specific self-efficacy (Dickerson & Taylor, 2000). In the study it was also compared whether the strengths of task-specific self-efficacy and global self-esteem would work as predictors of interest in performing a particular task and willingness to engage in the task. Ss consisted of 42 female students for the pilot study and 81 female students for the main study. Global self-esteem and task-specific self-efficacy were used as predictors of task choice and task preference. Results suggest that task-specific self-efficacy was a stronger predictor of whether a woman would choose a leadership task rather than a group-member task. In addition, task-specific self-efficacy predicted the strength of the woman's preference for the group-member task.

It should be emphasized that there are some criticism leveled against Bandura's Social cognitive theory (see for instance Eastman & Marzillier, 1984). Overconfidence in initial self-efficacy judgements has also been investigated (Stone, 1994). The argument is that some aspects of the conceptual framework of the theory are still unclear. Despite this claim, the critics acknowledge that people's assessment of their own competence might be powerful determinants of their future behavior (Eastman and Marzillier, 1984).

2.3.4 Gender differences in self-efficacy

Gender should be included in analyses of self-efficacy, since earlier studies have revealed gender differences in efficacy beliefs. According to these studies, men seem to rate themselves higher in self-efficacy than women (see Carlson & Grabowski, 1992; Chen, 1986; Jorde-Bloom, 1988; Jorde-Bloom, & Ford, 1988). These gender differences in efficacy beliefs might occur because computer skills and tasks may be viewed as masculine and perceived in a stereotypical way.

2.3.5 Age differences in self-efficacy

Besides gender differences, the literature suggest that *age* can contribute to variations in efficacy beliefs. It seems as age can contribute to an over- or underconfidence in computer self-efficacy (Kintzie, Delcourt, & Powers, 1994). However, the research results are somewhat ambiguous, because other studies have not found any effect of age on computer self-efficacy at all (see Webster & Martocchio, 1992). According to a meta-analysis, the studies that revealed a significant age-computer self-efficacy relationship had balance between male and female subjects, while those studies that did not find any significant relationship tended to be gender imbalanced (Marakas et al., 1998).

Even if computer self-efficacy is much studied (Henry & Stone, 1997; Hung & Liang, 2001; Igbaria & Iivari, 1995), there are only a few empirical studies of self-efficacy related to other specific IT applications. One study, however, gave interesting results (Debowski, Wood, & Bandura, 2001). A study of participants following two different modes of instruction in basic skills for electronic search shows exciting results. Those participants, who followed guided exploration, produced more effective search strategies, expended less effort, made fewer errors, rejected fewer lines of search, and achieved higher performance, than participants who practiced self-guided search strategies. Nevertheless, there are few studies of IT-specific self-efficacy in real work contexts.

If studies of specific self-efficacy will be conducted in work settings, the theoretical basic should be considered. It is suggested that, in principle, self-efficacy is a context- and task-dependent construct. The underlying assumption is that self-efficacy is related to an interaction between the individual and her environment, which is also the view of the present thesis. Thus, a logical conclusion is that more specific measurements of self-efficacy, developed for specific information technology tasks, should be used in studies of IT-usage, which is done in the present work.

To sum up, through various studies, self-efficacy has shown to be a valid factor to consider in investigations of performance at work. Moreover, several studies have strengthened the theoretical foundation of self-efficacy and Social cognitive theory. However, criticism has been leveled against the theory, mainly since the conceptual basis of the theory is still claimed to be unclear. Perceptual control theory suggests alternative explanations to the self-efficacy construct, since some data indicate that the positive relationship between self-efficacy and performance may depend on the cross-sectional design of the studies (see Vancouver, Thompson, Tischner & Putka, 2002, and Vancouver, Thompson, Tischner, & Putka, 2001). Because of the complexity of the mechanisms behind human performance at work, rival theories can give alternative explanations and therefore a substantial contribution to the understanding of the effect of self-regulatory phenomena on performance.

2.3.6 Computer self-efficacy

Computer self-efficacy is an evaluation of one's capability to use a computer (Compeau & Higgins, 1995). It includes an assessment of the ability to apply skills to broader tasks– not to single skills like formatting diskettes or handling a specific program.

Meta-analyses of computer-related behavior report gender, age, computer attitudes, computer experience, and computer skill to be significant correlates of

computer self-efficacy (Chua, Chen, & Wong, 1999; Smith, Caputi, & Rawstorne, 2000; Whitley Jr., 1997; Zhang, & Espinoza, 1998). Computer self-efficacy can have a positive influence on the duration and frequency of computer use at work (Compeau & Higgins, 1995, Compeau, Higgins, & Huff, 1999). A finding reveals increased performance with computer-related tasks to be significantly related to higher levels of self-efficacy, whereas decreased performance with computers is related to lower levels of self-efficacy (Harrison, Rainer Jr., Hochwarter, & Thompson, 1997). As is the case with general self-efficacy, it is possible to distinguish between three dimensions of computer self-efficacy:

Magnitude – reflects the level of individual capability expected. Individuals with high computer self-efficacy can be expected to judge themselves as capable of operating with less support than individuals with lower self-efficacy magnitude.

Strength – this refers to the level of confidence an individual has in his/her ability to perform various tasks. Individuals with high self-efficacy magnitude would perceive themselves as able to accomplish more difficult tasks (high magnitude) and they would also have greater confidence in their ability to perform such behaviors.

Generalizability – this is the degree to which the individual judgement is related to a particular domain of activity. As an example, individuals with high computer self-efficacy generalizability would be expected to be able to successfully use different computer packages and computer subsystems, whereas individuals with low computer self-efficacy generalizability would relate their capabilities to particular systems or packages.

Some years ago, Marakas, Mun, and Johnson (see p.18) suggested further clarifications of the computer self-efficacy construct. They argued that there is still a need for greater understanding of the different antecedents beyond individuals' computer-related skills and their decisions to use computers.

The benefit from a further development of the construct is, in a research perspective, to provide more precise assessments of manipulations in order to produce a change in computer self-efficacy. Another aspect is the need to understand the relationship between computer self-efficacy and other performance-related factors. A more practical benefit in work settings is the possibility to improve levels of individual and/or group performance.

As with general self-efficacy, the relationship between computer self-efficacy and performance is suggested to be reciprocal. As computer self-efficacy increases, performance at the task level improves as well. In time, a more

general level of computer self-efficacy may become a more salient predictor at both general and task-specific performance levels.

2.3.7 Self-efficacy & IT-usage

Empirical studies suggest that computer self-efficacy is positively related to e-mail usage (Minsky & Marin, 1999) and to the decision to use computers (Hill, Smith, & Mann, 1987). Yet, another study shows that individuals with high self-efficacy beliefs used computers more, perceived their computer usage to be more useful and evaluated management support higher than individuals low in self-efficacy (see p.21). Research also indicate that there is a positive association between telecommuter (working from home as a remote office) self-efficacy and both employees' behavioral strategies (i.e., structuring behaviors) and work outcomes - i.e., telecommuter adjustment (Raghuram, Wiesenfeld & Garud, 2003). These results emphasize the relationships between both self-efficacy and computer usage.

The level of self-efficacy might affect preferences for *different kinds* of information technology tools. The assumption is that individuals with high specific self-efficacy use the IT-tools that fit their work tasks to a greater extent and therefore might be more efficient in their usage than individuals with low specific self-efficacy (Huang & Liang, 2001). As a consequence, it is important to distinguish between different types of information technologies in studies of self-efficacy, as well as using specific measures of self-efficacy relevant for the technology focused on in the study. One conclusion is that analyses of the groups that score low versus high in self-efficacy beliefs should be performed, in order to reveal possible differences regarding the variables in the study.

The studies performed in the IT-area indicate a positive relationship between self-efficacy and e-mail usage, self-efficacy and the decision to use computers, and self-efficacy and telecommuting (i.e., working from home as a remote office). Altogether, findings like this suggest that specific measures of self-efficacy can be useful in studies of more specific information technology applications as well.

Moreover, high self-efficacy can work as a moderator of information-seeking, since employees with high self-efficacy seem to seek, integrate and use information more effectively than employees with low efficacy beliefs do (Challagalla, 2001). This research further suggests that employees low in efficacy beliefs seem less capable of integrating information obtained and using it effectively.

Another conclusion of the literature review is that analyses of the groups that score low versus high in self-efficacy beliefs should be performed, in order to reveal possible differences regarding the variables in the study. Furthermore, gender and age should be included in analyses of self-efficacy, since earlier studies have revealed such group differences in efficacy beliefs.

The role of self-efficacy in technological work settings has been investigated, even if these studies are still rare. The lack of knowledge raises several questions. One such question of interest to the current research is whether individuals with high computer/IT self-efficacy use more complex technology applications more frequently than individuals with low self-efficacy. On the basis of Social cognitive theory it is tempting to answer yes on this question. Social cognitive theory predicts that individuals, who persist in performing activities that are threatening to them, but safe objectively, will gain corrective experiences that will reinforce their efficacy and eliminate fears and resistance behavior. In reverse, people who give up performance will retain self-debilitating expectations and fears for a long time. This seems to be one logical and possible explanation to why extensive experience and certain forms of training (e.g. modeling and verbal support) might support successful IT-usage.

Theoretically, the social environment is thought to have an impact on individual self-efficacy, implying an interaction between the individual and her context. There are some empirical data that support this view on the individual-environment interaction. In a survey study, individuals' computer self-efficacy and expectations of the outcomes of using computers were found to be positively influenced by others in the work group and of others' use of computers (Compeau & Higgins, 1995). In another study, organizational support was found to have an indirect influence on usage, mainly through the perceived usefulness (Igbaria & Iivari (1995). The study also reported that self-efficacy had both direct and indirect effects on usage.

Even if self-efficacy in general is evaluated, there are still few empirical studies of self-efficacy related to specific IT-usage other than e-mail usage and general computer usage. Moreover, there are few studies of IT-specific self-efficacy in work contexts and the study performed by Debowski, Wood, and Bandura (2001) rather called for more examinations than fulfilled the need for such studies.

On the basis of what the literature describes regarding self-efficacy, some hypotheses are of more interest to investigate than others. The assumption is that:

- Specific self-efficacy (e.g. computer self-efficacy, Internet self-efficacy and intranet self-efficacy) is positively related to IT-usage at work since some

research findings suggest that individuals with high specific self-efficacy use the IT-tools that fit their work tasks to a greater extent and therefore might be more efficient in their usage than individuals with low specific self-efficacy.

- Specific self-efficacy explains more of the variance in measures of IT-usage and measures of communication at work than general self-efficacy because self-efficacy is specific for, and dependent of, the task at hand.

- There are significant gender differences in self-efficacy in favor of men, due to earlier research findings of gender differences in level of self-efficacy.

- There are significant differences between the two extreme groups scoring low and high in self-efficacy beliefs regarding certain characteristics. As an example the relevant literature shows that individuals with higher levels of self-efficacy have a more positive attitude towards computers and IT. As discussed before, some findings indicate that positive relationships exist between self-efficacy and e-mail usage, and self-efficacy and the decision to use computers. It is therefore of interest to investigate if there are other differences between the high and low scores in self-efficacy, e.g., if they differ in skill and experience in the IT-tasks.

Descriptions of self-efficacy constructs were discussed in the current section. In order to clarify the differences between the constructs and to illustrate the definitions used in the current research, the definitions are presented next.

2.3.8 Definitions of self-efficacy

Self-efficacy (SE), as defined by Bandura, is “*beliefs in one’s capabilities to organize and execute the course of action required to produce given attainments*” (Bandura, 1998, p. 3). This definition is among the most precise and well-operationalized definitions and also validated in earlier research, and is therefore used in the present studies.

Computer self-efficacy (CSE) is defined as “*a judgement of one’s capability to use a computer*” (see pp. 24-26). It includes the judgement of the ability to apply skills to broader tasks – not to single skills like formatting diskettes or handling a specific program. In the thesis work, the definition of the construct is chosen, mainly because it has been operationalized and validated in studies by Compeau & Higgins (1995), and Compeau, Higgins, & Huff (1999).

2.4 OTHER PSYCHOLOGICAL FACTORS OF RELEVANCE FOR IT-USAGE

2.4.1 Introduction

The literature review gave indications of other psychological factors that might be important in studies of IT-usage. These psychological factors are discussed next.

2.4.2 Attitudes

What are then the psychological mechanisms governing attitudes? Scholars suggest different views on attitudes, based on individual or social needs. Fishbein and Ajzen (1975) suggest that the term attitude primarily include three components: (1) an *affective* (emotional) component, indicating a person's evaluation of an object, (2) the *cognitive* dimension of an attitude is a belief, or an indicator of a person's subjective probability of certain characteristics of an object, and (3) the *behavioral* dimension of an attitude includes a behavioral *intention*, i.e. an indicator of an individual's probability to perform a particular behavior towards an object.

Attitudes include a value-expressive function; the attitude is then a statement of what an individual believes. Evaluative attitudes might be experiential and specific - restricted to a single object - or experiential and schematic - generalized to a class of objects. Expressive attitudes may also include a *social-expressive dimension* - the individual has a need to be accepted by others, a *value-expressive dimension*, because the individual has a need to define herself with important reference groups, or a *defensive dimension*, as the individual has a need to reduce anxiety.

Even if there seems to be a dominant research paradigm in social psychology that assumes that the attitude of an individual toward an object affects behavior related to that specific object, the issue is still controversial and should be handled with caution (Torkzadeh, Pflughoeft, & Hall, 1999). However, a suggested implication of the role of attitudes in studies of IT-usage is that exposure to a computer/IT will not generate interest unless the individual has a positive attitude towards computers. A prior finding suggests that the attitude an individual holds toward technologies, in fact, play an important role regarding computer usage (Pepermans, Verleye, & Van Cappellen, 1996). Moreover, the IS/IT literature suggests that user attitudes towards *different features* of computer information systems be related to user behavior.

A negative sign of attitudes in analysis is somewhat inconsistent with the assumption of the positive influence of attitudes on behavior. Nelson (1990) points out that this kind of results creates an interpretational ambiguity because it suggests that *behaviors decrease* in favorability as *attitudes increase* in favorability. Nevertheless, as suggested earlier, the perspective adopted here is that attitudes vary with the task at hand, assuming a reciprocal interaction between attitudes and behaviors (i.e. IT-usage). The literature shows a trend: attitude towards technology systems and computers has a positive connection to the usage of the computer/technology system. Still more interesting is that there seems to be a positive connection between attitude, self-efficacy and usage. In sum, earlier studies show that attitudes towards computers are related to computer usage, and therefore it is logical to include attitudes as a variable in studies of IT-usage.

2.4.3 Interest

Interest is a variable that, on the basis of a literature review, can be considered a possible but neglected factor of importance for IT-usage at work. Earlier research on interest suggests that it might be important for creative performance (Amabile, 1996a; 1996b). Interest has also been investigated in education (Drottz-Sjöberg, 1990), at work (Björklund, 1997, 2001; Sjöberg & Lind, 1994; Tollgerdt-Andersson, & Sjöberg, 1992), and in relation to computer/IT-attitudes (Truedsson & Sjöberg, 2000).

Interest is a conceptual aspect of volition, and can be viewed as *intrinsic motivation*, which means an action taken regarding the action itself. The opposite is extrinsic motivation, which is action that is related to external rewards. Intrinsic motivation may lead to a behavior that is driven by such a factor as curiosity. Interest in turn is assumed to affect performance.

The relationship between task interest and creativity has been a subject for large research efforts (see Eisenberger & Cameron, 1996, 1998; Hennessey & Amabile, 1998). The conventional perspective is that reward has a decremental effect on task interest and creativity, even if there are some results that support the incremental effect of explicitly quality-dependent rewards on intrinsic task interest. Interests were early assumed to be an important part of the creative personality (MacKinnon, 1960). As an example, openness to experience can be viewed in terms of the breadth of interest and curiosity. An assumption is that individuals may have certain abilities and skills important for creative work, but these skills need to be stimulated by intrinsic motivation in order to result in a creative performance.

The interest construct is also assumed to have a positive relationship with self-efficacy (see for instance Bandura, & Schunk, 1981, or Dickerson & Taylor, 2000). The proposition is that interest is developed through satisfaction with success, and that self-efficacy is enhanced by interest.

Few studies have examined the role of interest in IT-related work. An exception is the study by Johnson (1985), in which the characteristics of frequent microcomputer users among children were investigated. The result revealed that the children who had a *high interest* in using computers manifested higher levels of representational competence. A possible interpretation is that when individuals are interested in what they are doing or working with, there are greater possibilities for creative accomplishments. Other results show that interest in computers and general attitude towards computers are important explaining factors of attitudes towards information technology.

On the basis of the studies of interest outlined here, it is likely to assume that when individuals are interested in what they are doing or working with, there are greater possibilities for creative accomplishments. Intrinsic motivation (interest) is a basic incentive prerequisite of work performance and creativity, according to the outlined contemporary research. However, as noticed, the interest construct has rarely been examined in relation to computer- and IT-tasks in work situations. Neither has the relationship between interest, self-efficacy and creativity been examined extensively, although the intrinsic motivation-creativity link has some empirical support (see for instance Amabile, Hill, Hennessey, & Tighe, 1994).

A conclusion drawn from the literature reported in the present section is that interest and attitudes should be included in analyses of computer- and IT-usage.

2.5 THEORETICAL PERSPECTIVES ON CREATIVITY

Earlier research has examined psychological antecedents of creativity on the basis of four different perspectives which will be discussed more in detail in the present section.

The four most common study areas of creativity are the characteristics of the creative person, the creative process, the creative product, and the social environment's association with creative performance (see Amabile, 1988, 1996a, 1996b; 1997; Amabile, Conti, Coon, Lazenby, & Herron, 1996; Ekvall, 1983; 1996; 1997; Ekvall, Arvonen, & Waldenström-Lindblad, 1983; Ekvall, & Tångeberg-Andersson, 1986; Simonton, 2000; Sternberg, 1988; 1999). The most typical research questions commonly investigated by creativity researchers are often concerned of the characteristics of the creative person (creative

personality), the creative process, the conditions for creativity (influence of internal and external factors), and the characteristics of creative products (Brolin, 1992).

Since creativity is a complex phenomenon, most studies just detect smaller aspects of the phenomenon. In sum, the research efforts regarding creativity started with a focus on the abilities of the creative individual. Different psychological theories assume individual differences in cognitive ability. Through psychometric ability tests, and factor and correlation analyses, researchers try to identify latent dimensions that might explain individual variations in cognitive ability (see Kline, 1991).

2.5.1 The four P's: personality, product, process and press

2.5.1.1 *The creative person*

Ability, cognitive activities, and intrinsic motivation are suggested to be necessary for creativity. *Ability* refers to the ability to process information and to produce novel and appropriate responses. Creative skills also include knowledge concerning a certain knowledge domain: task-related skills and creativity-related skills. Among other personal characteristics, self-confidence, interest and curiosity are assumed to be important (see Amabile, 1996, or Csikszentmihalyi, 1994; 1996). *Intrinsic motivation* is an intrinsic interest in a task. Three kinds of knowledge domains related to creativity can be distinguished: 1) *Domain-relevant skills*: i.e. factual knowledge, technical skills, and special talents in a specific domain, 2) *Creativity-relevant skills*: includes cognitive style, working style, and the application of heuristics, and 3) *Task motivation*: includes motivational variables that determine a person's approach to a specific task. Task motivation includes *attitudes* towards the task as well as *perceptions* of own motivation for undertaking the task at hand. The assumption is that individuals will be most creative when they are intrinsically motivated, by the challenge of the work itself, by interest, or by satisfaction. Intrinsic motivation may be hindered by extrinsic incentives (as a reward or money), which can result in people feeling externally controlled.

Despite the diversity of tasks in studies of creativity, Conti, Coon, and Amabile (1996) revealed a consistent pattern through the relationships between nine measures of creativity. A conclusion from the findings is that *general skill* can contribute to creativity, both across different tasks within a domain and across different domains.

Creative performance also involves cognitive operations. These *cognitive activities* involve search through spaces of possibilities where individuals are

attempting to reach new knowledge (Shalley, 1991). The creative process has furthermore been related to cognitive operations, which include convergent and divergent thinking capability. Divergent operations are argued to be of utmost importance for creativity, because they might contribute to a production of several possible solutions of a problem.

2.5.1.2 The creative product

Another approach in creativity research is the focus on the creative *product*. The term ‘product’ implies a kind of activity that gives a result of some kind, e.g. a theory, an idea, or a technical solution. One technique is to use judges (experts) in a specific domain, and use their subjective judgement of to what extent a product (such as a collage) is creative or not (see Amabile, 1996, or Redmond, Mumford, & Teach, 1993).

2.5.1.3 The creative process

The creative process, i.e. the mental human processes in creative performance, has been studied in various ways. Regarding creativity, the conventional assumption is that the cognitive activity includes several distinct stages: problem definition, environmental scanning, data gathering, incubation (unconscious mental activity on the actual problem), insight into the problem solution, evaluation of the solution, and implementation of the solution. Flow - the intensive experience of joy, satisfaction and concentration when one is performing a task is also regarded as a type of creative process (see Csikszentmihalyi, 1996).

2.5.1.4 Environmental influence on creativity

Several researchers focus on investigations of creativity in a system or reciprocal interaction between the human being and the environment (see Lubart & Sternberg, 1995). In these research perspectives, factors such as trust, challenge, and support for ideas are suggested to be important for perceptions of the psychological climate as a support of creativity in organizations.

The environment (i.e. organizational context) can be regarded as an important resource for creative performance. People may perceive the same organizational context in distinctively different ways, and these environment perceptions can influence the level of creative behavior. As a consequence, considerations of certain organizational characteristics may increase or hinder development of new ideas, products, and processes.

Management's supportive role for creativity is a subject in research. Supervisor encouragement, constructive work-focused feedback and a supportive and non-controlling supervision style are related to creative performance (Burnside, Amabile, & Gyskiewicz, 1988; Oldham & Cummings, 1996). In contrast, competition of coworkers, surveillance and threatening critical evaluation are negative influences that undermine intrinsic motivation and creativity (Amabile, 1996). Examples of other negative organizational influences are lack of communication, cooperation, rigid procedures and routines, short deadlines (time pressure), a disinterest in projects across departments, and competition. Furthermore, the style of supervision is an important antecedent of individual creativity and a moderator of self-efficacy and work-performance relationship (Ballantine & Nunns, 1998). When supervision is supportive and non-controlling, employees produce more creative work as compared to when supervision is controlling and non-supportive.

The leadership is one factor of importance to the news organization. Management qualities such as to be able to structure meetings and prevent too dominating individuals from destroying valuable meeting time are suggested to be of importance to journalism in the digital age (Herbert, 2000).

Research findings indicate that interpersonal cohesiveness can have positive effects on group interaction and creative performance because interpersonal preference can increase creativity by allowing communication to be less inhibited (Hogg, 1992). Cohesiveness can be defined as "member attraction to the group," meaning the forces acting on the members to remain in a group (Craig & Kelly, 1999).

As outlined in the current section, diverse perspectives on creativity have emerged during the last decades. However, research on the possible connection between usage of and communication via IT and creative performance is rare. More recent studies of creativity focus on a combined perspective of the individual and her context. There are also suggestions of how to conduct research of IT/IS and creativity. For example, some argue for a more broadened, comprehensive framework, which includes organizational, work group factors as well as personal variables when studying individual adjustment to new technology. One suggestion is to focus on individual-level adjustment outcomes, including organizational factors such as determinants of individual attitudes and behaviors (Nelson, 1990). Moreover, some suggest that there is also a need to broaden the research in the field of information technology and psychology with an integration of organizational and cognitive concepts, methods and levels of analysis (Clegly, 1994).

2.5.2 Creativity and IT-usage

Can there be a relationship between the usage of IT and creativity? The research on this question is meager. Since IT is a common resource in organizations today, it evokes an interest in knowing whether IT usage can stimulate creative performance.

A possible advantage of IT is that it might increase the amount of information from lower to higher levels of the hierarchy in an organization (Sproull & Kiesler, 1986; 1991). Moreover, IT might provide people with more time to think about how to formulate opinions. Research on e-mail usage from a communication perspective often shows that e-mail is perceived by the users as rather *non-transparent*, e.g. it is a communication channel that hides a lot of the communication cues (e.g. gestures and face expressions) necessary to interpret the communication. Media richness theory proposes that communication technology restricts and determines the outcomes of communication through these technologies (Schmidt, & Fulk, 1991; Klebe Trevino, Lengel, & Daft, 1987). Due to a possible increased status balance among employees when communicating via information technologies, IT might be valuable to creative performance, like idea-generation; people might find it easier to suggest ideas and solutions through IT-communication, than in face-to-face meetings.

As was pointed out earlier, research on information technology usage in organizations and its connection to creative performance seems to be neglected. One study in the area, though, disclosed that using IT to improve the internal communication also improved the work environment, but that it was negatively related to productivity (Johannessen, Olaisen, & Olsen, 1999).

At present, there is no clear understanding of how IT may foster creativity (or *if* it does). However, creativity is a prerequisite for organizational innovations and essential in achieving future business growth and success. The effects of specific computer support systems on creativity have, to some extent, and with mixed results, been evaluated on the small group level (Klein & Dologiteb, 2000). Nevertheless, the most used information technology applications in organizations in Sweden are at present e-mail, intranet, and Internet. Studies of how these tools might influence creative performance at work have not been performed in Sweden as far as we know. This thesis work might fill this research gap.

Both Internet and Group support systems (GSS) as e-mail are possible medium channels for creativity (Chidambaram, 1996; Guastello, 1998).

Regarding the relationship between IT and creativity, a parallel can be drawn to research on TV's influence on creativity. Although the evidence is meager, there is a suggestion that specific TV programs may foster creative imagination (see Valkenburg & van der Voort, 1994). This is in line with the stimulation hypothesis (i.e., TV is seen as an information provider which enriches the repertoire of ideas from which viewers can use ideas when engaged in a creative task). However, the case might be quite the opposite. According to the reduction hypothesis, the medium (i.e. TV) is assumed to be a suppressor of creativity. It might have a negative effect on reflective thinking, on the ability to dissociate oneself from existing information, and decrease cognitive effort. These opposite hypotheses raise the question whether IT-tools work according to the stimulation or the reduction hypothesis, i.e. as support of or hindrance to creative accomplishments.

2.5.3 Definitions of creativity

Since the 50's, different scholars have come up with different conceptual definitions of *creativity*. In earlier days the construct was conceptualized, operationalized and measured as either a personality or a cognitive construct. As several researchers have noticed, there exists a variety of definitions of creativity and consequently, a controversy debate concerning the acceptance and appropriate use of these definitions (Pankhurst, 1999).

Stein (1994, p. xi) proposes that:

"Creativity is a process that results in a novel work that is accepted as useful, tenable, or satisfying by a significant group of people at some point in time (....) In each stage one may see the effects of intra-personal and interpersonal factors. All these factors reflect the fact that creativity occurs in a social context and is a function of the transactional relationships between the individual and the environment - the creating individual is both affected by and affects his environment".

Stein's view is that creativity occurs as an interaction between the individual and her environment and that the creative result has to be acknowledged by a significant group of people at some point in time.

The most common view among researchers today is that creative ability exists in every individual, at least to some degree, and that what determines creativity is what is new for the individual rather than what is commonly accepted as new.

Pankhurst (1999) suggests a definition of the creativity construct:

"The ability or quality displayed when solving hitherto unsolved problems, when developing novel solutions to problems others have solved differently, or when developing original and novel (at least to the originator) products" (p.18).

Due to the controversy as to a consensus of the definition of what constitutes creativity, my view in the present work is that the definition should be broad enough to cover different aspects of what constitutes creativity at work, and specific enough to identify the quality of creativity. The definition of creativity for the present research is close to the definition suggested by Pankhurst. The view and definition taken for the present research is that *creativity is something that is determined by the individual as well as by the social environment. It includes new thinking and has features of novelty or different approaches in ideas, products, or other aspects of work performance in a specific knowledge domain* (i.e. the journalistic profession).

2.6 INFORMATION SYSTEMS AND IT-USAGE

Information systems (IS) have been widely accepted as support of organizational activities and as competitive advantage (Peters, Heng, & Veta, 2002). IS may be useful in two different roles: an administrative role that aims to enhance efficiency and to automate administrative routines, and an operational role, which aims to develop and automate business processes. According to Päiväranta (2001), IS should support the means, routines, structures, and communication at work by utilizing appropriate information technology. Another aspect of IS is that these systems allow people to work and cooperate despite functional, geographic, and time boundaries (Hayes, 2001).

During the 70's, researchers were identifying the conditions that successfully could support the integration of IS into business. During the 80's, both academic and business communities began to view IS as possible competitive advantages. From the mid-80's, most research investigated and developed models for predictions of systems use. Factors like system characteristics, attitudes towards usage, perceived competence (self-efficacy), perceived usefulness of the system, perceived ease of use, training, and user expectations (Staples, Wong, & Seddon, 2001) are related to information systems/IT acceptance and usage. Chang and Cheung (2000), for instance, found that perceptions of near-term consequences of Internet- and WWW-usage (i.e. that the usage can increase the quality and effectiveness of job performance) affect the intention to use Internet.

Today, some claim that IS are costly and have a low success rate (see Legris, Ingham, & Colletette, 2002). Despite the negative voices, several reasons have been put forward in favor of why business companies should invest in IS. The

arguments are that IS can cut costs, can produce more without increasing costs, and, also, can improve quality of products or service. In research on IS, social environment factors such as facilitating conditions, social factors (i.e. individual internalization of a reference group in certain social situations), perceived near-term consequences, and perceived complexity have been found to be explanatory factors of IS with Internet/WWW platform.

Access to IT and IT use is very high among Swedish enterprises and in households. During the spring of 2003, about 97 percent of all enterprises with ten or more employees used computers (Statistics Sweden, 2004). The share of Internet users in 2003 was nearly as high, or about 95 percent. Totally 52 percent of the employees used computers with Internet access at work. But about 30 percent of the companies with 10-19 employees reported that they sometimes had experienced problems related to low levels of IT-competence among the applicants for a job. Around 60 percent of the companies with 100 employees had sometimes experienced a lack of IT-competence among the applicants for a job. According to statistics from the Nordic countries, people in Iceland are the most active Internet users (Nordic Information Society Statistics, 2002). Swedes are also slightly more active in using the Internet when compared to people in the other Nordic countries. Over half of the Nordic population is regular e-mail users.

Regarding journalism and IT-usage, according to U.S. surveys (see for instance Middleberg & Ross yearly surveys), American journalists are using Internet more than ever, and because of rapid changes, the typical newsroom has far more Internet connections than phone lines. Unlike the American data, in a British investigation, the journalists were quite negative about the idea of "surfing the Net for stories" (Williams & Nicholas, 1997, p.219.). However, one should be aware of the fact that Internet usage is much more common today, 2004, than it was six years ago, also among journalists. Despite the rapid acceleration of IT development in recent years, journalists still seem unsure that they have enough training to work with new technical tools or that journalism schools offer adequate technical preparation. The Middleberg & Ross studies are performed in U.S., and are therefore not perfectly comparable to Swedish circumstances. In Sweden, Balsvik (1999) found that journalists are appreciating IT as a source of more extended all-round education through the use of Internet. Furthermore the same study indicates that journalists must develop a skill of sifting information in order to use Internet efficiently.

Regarding the development towards a society distinguished by information abundance, the need for the competence of journalistic methods and skill was suggested to increase in the 90's (Singer, 1997; 1998). In Sweden, information technology usage is nowadays an integrated part of journalistic information

acquisition. It is suggested that journalists in the future will have access to enormous quantities of information through public electronic databases, archives, and political correspondence (Alström, Enlund, Hedman, & Hvitfelt, 2001).

2.6.1 Negative consequences of IT-usage for the individual

The use of information technology combined with other stressors at work can influence health and might also be age-related (Seppala, 2001). Furthermore, research on creativity shows that stress can affect performance negatively (Jex & Bliese, 1998). Stress, information overload, and a low level of self-efficacy can effectively decrease creative accomplishments. These research findings have revealed a link between levels of self-efficacy, negative reactions from employees when they perceive that they, or their work groups, are not capable of high levels of performance, and stressors at work.

In sum, in the last fifteen years the research focus has shifted from the technologies as systems supporting different business needs to the issue of individual and environmental factors of importance to individuals' usage of the technologies. Thus, it could be argued that this shift urges for an understanding of the individual factors (e.g. attitudes and perceived competence) and the social factors of importance for information technology usage at work.

2.6.2 Perspectives on human-systems interaction

One consequence of the shift from considering IT as a business instrument to see it as a tool for the individual is a shift to a psychological framework in research. In the next section, psychological perspectives related to IS/IT-usage will be presented. Some relevant traditional psychological theories and scientific approaches to human-computer interaction, such as traditional cognitive psychology and more recent approaches to IS/IT-usage, will be discussed.

Some relevant traditional psychological theories and scientific approaches to human-computer interaction, such as traditional cognitive psychology and more recent approaches to IS/IT-usage, were discussed in the earlier section. Next, factors of relevance for studies of IT-usage are outlined. It should be noticed that the concept ICT - Information Communication Technology- is sometimes used as a substitute of the term "IT" among researchers in the IS/IT field. However, IT is a commonly used and established term and is therefore used in the thesis.

2.6.3 Demographic factors and IT-usage

2.6.3.1 *Age*

Earlier research has found empirical evidence that age is related to Internet usage (Kraut, et al., 1998). In Sweden, the number of Internet users seems to increase with a decrease in age (Österman & Timander, 1997). More up-to-date surveys revealed several differences regarding Internet usage patterns in the Swedish population (Statistics, Sweden, 2000; 2001; 2004): the older people are, the less frequently they use the Internet. Young people are the most frequent users today in Sweden: more than 90 percent of people aged 16-19 used the Internet during 2000, compared with 70 percent of the age group 35-44. Of individuals between 55-64 years, approximately 46 percent used the Internet. As a consequence of these findings in the Swedish population during these years, age differences should be considered in an analysis of IT-usage at work.

2.6.3.2 *Gender*

There is empirical support for gender differences in psychological human functioning and for the functioning of the person-environment system. Gender differences also exist in Internet use (Morahan-Martin, 1998). Males seem to feel a higher degree of control when using computers than do females (Hattie, 1990), and earlier research shows some impact of gender on general computer-related behavior (e.g. Dyck & Smither, 1996). In addition, females seem to be more risk-averse and have lower initial levels of computer self-efficacy than males (Murphy, Coover & Owens, 1989) and gender differences in students' computer skills are also reported (Qutami & Abu-Jaber, 1997).

Österman and Timander's findings in 1997 indicate that men in Sweden seem to be more frequent Internet-users than women. For example, men use several Internet functions more frequently than women do. Gender differences in favor of men were discovered in e-mail usage (64 and 55 percent, respectively), information gathering via Internet (67 and 57 percent, respectively), and communication with the public sector (30 and 24 percent, respectively). More recent data show, however that, in general, differences between Nordic men and women in the access to and use of information communication technology (ICT) are negligible (Nordic Information Society Statistics, 2002). However, there is some indication even today that men are somewhat more intensive Internet users.

The reported findings of gender differences in IT-usage, although perhaps negligible, have consequences for the current study. As pointed out by Magnusson and Stattin (see p.15), a methodological consequence of the

empirical evidence of gender differences in different domains is the necessity to analyze data for males and females separately, in order to avoid misleading results. As a consequence, the present studies will include analyses of group differences between men and women.

2.6.3.3 Computer skill

There is a great deal of evidence in the human resources training literature that training in self-management skills can improve job performance (Frayne & Geringer, 2000). For instance, subsequent training may increase self-efficacy, outcome expectancies, and job performance. As noted before, some research suggests computer skill to be a factor of significance for attitudes towards computers and for human-computer interaction (Harrison & Rainer, 1992; Truedsson & Sjöberg, see p. 30). Factors such as male gender, younger age, more experience with computers and attitude of confidence towards computers play significant roles in determining computer skill (Harrison, Rainer Jr., Hochwarter, & Thompson, 1997). In addition, computer skill has shown to be a correlate of computer self-efficacy (Chua, Chen, & Wong, 1999; Smith, Caputi, & Rawstorne, 2000; Whitley Jr., 1997; Zhang, & Espinoza, 1998). A conclusion to be drawn is that computer skill should be included in analyses of more specific IT-usage as well.

2.6.3.4 Computer experience

Yet another variable of significance for studies of computer- and IT-usage is experience. The level of experience with computers is a possible antecedent of both attitudes towards computers and computer performance. Prior research indicates that greater experience with computers is connected with more positive attitudes towards computers and also with learning (Dyck, 1996), even if the opposite can be the case. That is, some learning inventions may be unsuccessful in increasing positive attitudes or can even lead to a decrease in computer liking. Computer experience is furthermore a correlate of computer self-efficacy (Harrison, Rainer Jr., Hochwarter, & Thompson, 1997).

Computer experience might have a strong positive effect on self-efficacy, perceived ease of use, perceived usefulness, as well as on usage (Igbaria & Livari (1995). As a consequence, a question of concern is whether computer experience is a relevant explanatory factor of more specific technology applications as well, other than general microcomputer usage.

When deciding what individual psychological factors should be considered when performing studies of computer- and IT-usage, the researcher can replicate studies of variables that have been examined before and see if the result can be

repeated. Further, the choice of variables can be made on the basis of which factors seem to be relevant to a certain theoretical framework. Since IT- and computer usage include both cognitive and social components, studies of these behaviors need to acknowledge both aspects. Social cognitive theory considers cognitive, affective, and environmental influences on human behavior and is therefore appropriate for empirical research on IT-usage. As proposed earlier, the self-efficacy construct has both the theoretical basis and empirical support. However, studies of the relationship between self-efficacy and IT-usage are rare until now.

2.6.3.5 Classifications of information technology applications

Electronic networks (e.g. intranets, e-mail, and Internet) will from now on for practical reasons be named "IT". The definitions of IT used for the present project are Internet, which is a net with different protocols supporting applications such as WWW, gopher, discussion-groups, virtual realities and telnet.

Internet - Internet is a large web of computer networks, which gives us access to a considerable number of services like e-mail, Telnet, FTP and WWW. The way of communicating on the Internet is called TCP/IP after two of the most important protocols.

World Wide Web (WWW) This is a popular Internet service based on hypertext. The pages are created with the language HTML and transferred with the protocol HTTP. The most common browsers are Microsoft Internet Explorer and Netscape Navigator.

Intranet is a computer net for a limited group of users, often specific for a certain organization. Using the description of Curry and Stacich (2000), intranets are private computing networks, internal to an organization, which may include internal web, electronic mail, newsgroups, several applications, and online meeting possibilities.

An electronic mail system (e-mail) is a popular Internet service for sending text messages and attached files between Internet users. The most important protocol is SMTP, Simple Mail Transfer Protocol. Common mail servers are Microsoft Exchange and Sendmail, common browsers are Outlook and Eudora. E-mail can further be described as having three general characteristics (Sproull & Kiesler, 1986). First, it is asynchronous since senders and receivers do not take part in the communication at the same time. Second, it is fast, and third, it is text-based.

2.7 SUMMARY

In the present research, the focus is mainly on how certain *work conditions* might support or nurture creativity. IT-tools are commonly used at work places today and there is a possible link between IT-usage and creativity

As Oldham and Cummings (1996) point out, it is important to make a distinction between organizational innovation and creative performance. Creative performance includes ideas or products at the individual level, whereas organizational innovation relates to successful implementation of these products at the organizational level. The current thesis project will focus on the *creative performance at work as perceived by individuals*, not on the implementation of creative products or ideas at the organizational level. No study has, as far as we know, examined the relationship between efficacy beliefs of IT capability, IT-usage and creative accomplishments in a journalistic context. The proposition suggested here is that an individual must possess a certain degree of self-efficacy beliefs to obtain an ultimate creative work performance. Too low self-efficacy expectations can have a negative influence on such work-related outcome variables as creativity and IT-usage. Similarly, high self-efficacy beliefs might have a positive impact on attitudes towards information technology usage, efficient communication, IT-usage, and creativity.

The view taken in the present framework is that in order to stimulate effective IT-usage, media organizations and corporations must consider how to support and develop employees' beliefs in personal IT-skills. Managers need to construct an environment that is appropriate for successful IT-usage, which includes a climate that stimulates creative work through IT-support and offers adequate social and economic resources. The present studies seek to extend this line of thought to investigate creativity as it appears in journalistic work contexts.

Chapter 2 introduced some general research questions of interest for the thesis. In the next chapter, more specified questions will be presented. The conceptual research model is described, including the general method, procedures, and data analyses employed. The empirical studies are also presented, including participants, procedures, questionnaires, scales, and indices.

3. RESEARCH APPROACH

3.1 INTRODUCTION

The present chapter presents the general research approach and the design of the empirical studies. Furthermore, the background data of participants are presented. The scales that operationalized data for Study 2 and 3 are presented together with the hypothesized relationships between the variables in the studies. The results of the studies will be reported in chapters 4, 5, 6, and 7, respectively.

3.2 GENERAL RESEARCH APPROACH

In the present section, the general research approach and methodology will be discussed. As was outlined in chapter 1, *the first objective* of the present thesis project is to explore psychological factors' influence on how, when, and why IT is used at work. In connection to the first objective, it will also be discussed whether specific measures of self-efficacy could be considered as more valid assessments than measures of general self-efficacy. In order to achieve the objective stated above, two separate studies were designed (Study 1 and Study 2).

The second objective of the thesis is to examine the relationship between IT-usage and creativity. The examinations are limited to a specific work context, news journalism in Sweden. The sample chosen are assumed to be fairly representative of the population of Swedish news journalists, with respondents varying in age, experience, education and geographical location. It was investigated whether IT-technologies were perceived as a support or an obstacle by journalistic professionals in their work settings, and whether there was a relationship between the degree of individual self-confidence in IT-related skills and creative work performance among journalists. In order to achieve this second objective, two separate studies were designed (Study 3 and Study 4).

3.2.1 Methodology

When designing a research investigation, one choice to make is to select between analyses of quantitative and qualitative data. A researcher's ontological perspective (view of reality) often differs in the two kinds of approaches. For those applying a *quantitative* approach, the view of the world is deterministic. The research aim is to establish causal relationships between a set of variables chosen prior to the study. Often the aim is to make a prediction from the known value of one variable's influence on another. An analysis of *qualitative* data, in turn, often aspires to the understanding and interpretation of certain phenomena. With this approach the specific research questions are not necessarily stated in

advance. The quantitative approach is often argued to be more objective than the qualitative one, which by some researchers is referred to as more subjective. Instead of choosing between qualitative versus quantitative methods, it is more fruitful to see both methods as complementary. If the research aims for a result that is possible to generalize, then it often focuses on many subjects. Such a study often rests on theories dealing with general relationships and hypotheses. In turn, qualitative data often aims to develop constructs. The approach in the present work is rather pragmatic. The research question should determine which method is appropriate to use, not the other way around. Often the most effective strategy is to use some kind of triangulation (for a genuine presentation of the classical opposition between qualitative versus quantitative methods, see Starrin, Larsson, Dahlgren, & Styrborn, 1991).

Assumptions about the nature of science can be thought classified in two dimensions, a subjective-objective dimension and a regulation-radical change dimension (see Figure 4, below).

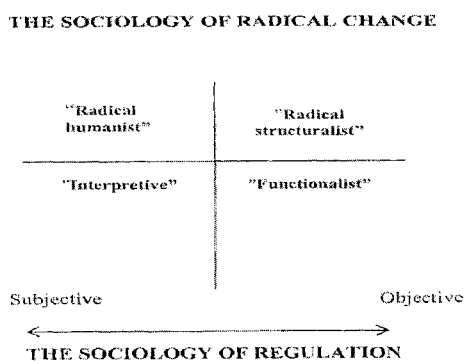


Figure 4. Four paradigms for the analysis of social theory
(After Burrell & Morgan, 1979, p. 22).

Characteristic of the *objective* approach to social science is to treat the world as an objective reality, to search for scientifically analyzed relationships and regularities. Of methodological importance is the concept per se and its measurement. The scientist looks for universal laws that may explain the observed reality, which is a positivist epistemology.

The alternative way of understanding the social reality is to stress the *subjective experience* of individuals who create their world. The main concern for choosing this way is a wish to understand the individual, rather than to search for universal and general explanations. The epistemology of the subjective dimension of social science is anti-positivism, with a relativistic view on the

social world. The subjectivist approach to science is ontologically nominalist and epistemologically anti-positivist. The most extreme form of the subjective approach argues that the human is completely autonomous and free-willed. The methodology of the subjective approach is ideographic, assuming that you can only obtain knowledge by getting first-hand knowledge of the subject of examination. In comparison, positivism, realism, and a nomothetic methodology of regularities and natural laws characterize the objective approach to social science.

The term *sociology of regulation* refers to work by theorists who are concerned with explanations of unity and cohesiveness. The scientific focus is on understanding why society is maintained as an entity and on regulation in human behavior. The *sociology of radical change* stands as an opposite to the sociology of regulation, and its basic concept is the search for structural contradictions and conflicts. The focus is on finding explanations for radical change and upon the physical deprivation of the human. Both perspectives of regulation versus radical changes can be either objective or subjective in terms of how the scientist chooses to view reality and the world (see Figure 4, p. 45).

Burrell and Morgan (1979) suggest four main paradigms, each one defined by certain meta-theoretical assumptions which guide the frame of reference, the theorizing, and the view of the world of the social theorists who work within them. However, in any given paradigm, there will be theorists with different standpoints. The *functionalist paradigm* has been the dominant framework in academic sociology and in the study of organizations. This frame work is also chosen for the present research work. The research is mainly based on an objective approach with the aim of finding relationships between the studied phenomena. The aim is to investigate human behavior from a view of regulation, in order to influence smaller changes rather than radical changes in society. That is, the ambition is to hopefully contribute with knowledge about work factors that can be of help in shaping good work and work environments. However, it should be noted that the scientific view taken for the present work does not exclude influences from the interpretative paradigm. Instead, the standpoint is rather pragmatic, since the assumption is that neither of the scientific views of epistemology and ontology should be a rigid standpoint.

These standpoints should work as guiding principles for the researcher to make the best choices of methods and analyses in order to answer the research questions of interest. Often there is a conventional agreement among the academy of research to choose between either of the two approaches.

3.2.2 Level of analyses

In this research, the unit of analysis is the individual person, the journalist. One argument for the choice of an individual level of analysis is a strict statistical consideration. Aggregated data often show stronger relationships among a set of variables. Another more obvious reason is that aggregated data of journalists were missing at the time when the empirical studies were conducted. Therefore, there were no aggregated data available for comparisons.

In order to achieve the objectives stated, four empirical studies were conducted. The examinations were limited to a specific work context, news journalism. As was outlined in chapter 1, the first objective of the present thesis project was to explore psychological factors' influence on how, when and why IT is used at work. This objective is motivated mainly by earlier research in Human-Computer Interaction (HCI), which has given indications of variables of importance for behavior (usage) of computer systems. The objective is also motivated by empirical research in Social learning (cognitive) theory, which suggests self-efficacy to be of importance for work performance in general, and for human-computer interaction. On the basis of a literature review some questions emerged: What are the relations between self-efficacy beliefs and IT-usage? How can managers support individual self-efficacy beliefs regarding efficient technology usage through a stimulating and appropriate organizational environment?

Two specific research questions were formulated:

- (1) *What are the important perceived aspects that can explain Swedish daily newspaper journalists' perceptions of effects of IT on communication at work and IT-usage at work?*

The independent variables were selected on the basis of the framework of earlier research and on Social cognitive theory (see chapter 2). Related to the first objective, it was interesting to investigate whether specific measures of self-efficacy could be considered as more valid assessments than measures of general self-efficacy. In order to achieve the objective, two separate studies were designed, Study 1 and Study 2.

The second objective of the thesis was to study the relationship between IT-usage and creativity. It was investigated whether IT-technologies are perceived as a support or as obstacles for journalistic professionals in their work settings, and furthermore, if there exists a relationship between the degree of individual self-confidence in IT-related skills and creative work performance among

journalists. In order to achieve this objective, two separate studies were designed, Study 3 and Study 4.

A research question, concerning IT-usage and creativity, was motivated by an identified gap in earlier research. It was seen as important to investigate if, and how, IT is perceived as an efficient work tool for creative work accomplishments in the journalistic work. Studies 2 and 3 aimed to answer the following research question:

(2) What relationships exist between IT-usage at work and creativity among Swedish newspaper journalists?

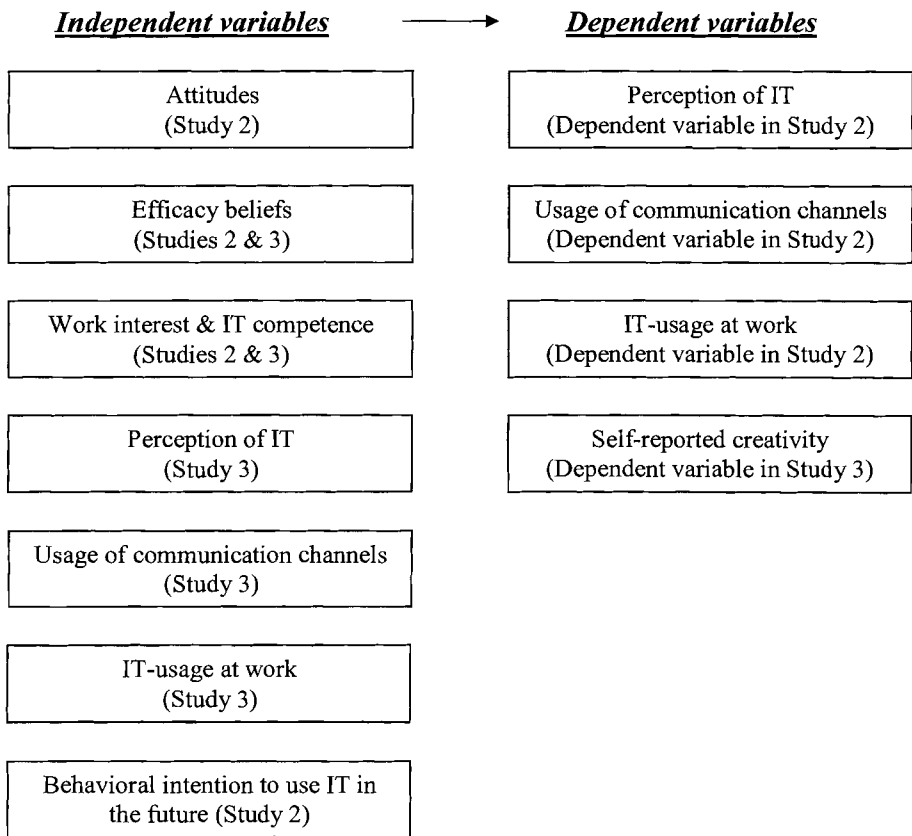


Figure 5. The conceptual model of the interrelated variables in the studies.

3.3 RESEARCH DESIGN

3.3.1 Introduction

In order to be able to answer the research questions, four separate empirical studies were performed. Each study has a certain research focus and will be described more in detail in chapters 4–7. The studies were designed to examine the conceptual model (see Figure 5). All participants in the studies were journalists. As a first step an interview study was conducted two surveys (Studies 2 and 3).

3.3.2 Research approach and design of Studies 1 and 4

Study 1 and 4 are interview studies. Study 1 was an explorative study aimed to constitute the basis for the subsequent studies. It aimed to examine how the electronic media have been integrated in the daily practice at news offices. Furthermore, it examined how and why electronic networks are used among Swedish daily newspaper journalists. The ambition was to gather information in order to develop the items of the questionnaire to be used in the following studies.

In Study 4, a further investigation of the results obtained from the earlier studies was conducted in order to clarify the interpretations of the relationship between IT-usage and creativity. In interviews with journalists, the influence of IT-competence and IT-usage on creativity was investigated.

An interview is a face-to-face interpersonal role situation in which the interviewer states questions for the respondents to answer. Two broad types of interviews exist: structured/standardized and unstructured-/unstandardized. In the standardized form, the questions are fixed. Unstandardized interviews are more open and flexible. The structured interview is probably the best instrument for collecting people's behaviors, feelings and attitudes. However, there are of course drawbacks with interviews as well. Time, cost and relevant skills in the construction and performance of interviews are some possible disadvantages with interviews. In Study 1 and 4, a form of unstandardized interview was used, with themes formulated in advance.

3.3.3 Research approach and design of Studies 2 and 3

Surveys are useful when the researcher wishes to investigate naturally occurring phenomena – processes of life as they occur – as opposed to manipulated variables (Rigsby, 1991). The systematic data collected allow the exploration of relationships among variables. Because of the major problem of establishing

cause-effect relationships in survey research, the common reason for using this method is to establish whether variables covary and under what conditions. In order to enable control of alternative explanations of variation in the dependent variable, survey researchers use statistical procedures. The strategy is to include several control variables in order to observe their effects on any observed relationships. Therefore it is of importance to secure the findings by an accurate theoretical framework in order to understand earlier research and propose theoretical connections between variables of interest.

The chosen design was motivated by the usefulness of integrating data from several sources as a mixture of different kind of data (for an extensive discussion about triangulation, see Yin, 1994). The interview study should, in this case, serve as a complement to the survey. Triangulation is important for the construct validity, because multiple sources of evidence offer multiple measures of the same phenomena.

There are several ways of dealing with threats to correlational designs. One way is to consider theoretical and empirical evidence very carefully in order to decide which variable is the assumed cause rather than the effect. Through the present literature review of both theoretical approaches and earlier empirical studies, such considerations and choices were taken.

The task of multiple regression analyses and correlation designs goes beyond simply noting the associations between variables; rather, the task is to try to explain the causal links by which all of the variables produce the association. In order to assure that multicollinearity did not affect the regression models, analyses of collinearity were performed. The analyses showed that there were no excessively high correlations between the independent variables in the models.

3.3.4 Limitations

The sampling technique of the present studies is not based on random sampling. Therefore, the generalization possibilities are limited. Research on cognitive-perceptual biases suggests that people who score low on performance test overestimate their own performance relative to others, and high scorers underestimate their own performance (Krueger & Mueller, 2002), which theoretically could affect self-reported data. More objective data would have been desirable but was not possible to achieve due to practical and economical limitations.

Another restriction is the cross-sectional design of the studies, which requires careful interpretations of cause-effect relationships of the results. Therefore, and as will be discussed further, alternative explanations must be considered in

discussions of the results obtained. In comparison, a longitudinal study would have been preferable even if such a design not always provides a complete base for drawing causal inferences. However, longitudinal designs are better appropriate for prediction equations than are cross-sectional designs (for a discussion of appropriate research designs, see for instance Breckler, 1990).

To examine the data, regression analyses were performed. It should be recognized that if only variables that by theory are suggested to be causes of the independent variable are included as regressors, then the beta-value could be interpreted as a measure of strength of the effect or impact of X_1 on Y . However, this does not imply causality; therefore any causal interpretation of regression coefficients should be based on theory (Berry, 1993, gives reasonable explanations for this argument). As a consequence, the variables selected for the current studies were based on theory and on earlier research.

It should further be noted that specific limitations are connected to the stepwise procedure in the regression analysis. One obvious risk is that more relevant variables might have been neglected, in favor of more inappropriate variables. However, the fact that the selection of the variables was based on earlier research as well as on theory will possibly reduce the risk. Furthermore, stepwise procedures are sensible to sample specific errors due to the potential of capitalization on chance. An additional potential bias is that one variable at a time is considered. A significant part of the variance, given the presence of both, would not be considered in the final model. However, out of different selection methods, the stepwise regression method might be to prefer, since it is assumed to be the best compromise between finding an optimal equation predicting future randomly selected data sets from the same population, and finding an equation that predicts the maximum variance for the specific data set under consideration.

Reliability (internal consistency) of constructs was estimated using coefficient alpha. Even if this reliability estimate is commonly used among researchers, the strategy may still be prone to measurement errors (see Schmidt & Hunter, 1996, about the important role of reliability in research). Nevertheless, larger reliabilities produce smaller downward biases than do smaller reliabilities. Still, there are some variables whose measurement seems to be unaffected by transient error, for example, abilities, aptitudes and performance ratings. It is suggested that reliability estimates still can be an appropriate way of handling measurement error for these kinds of variables (Cortina, 1996, offers a valuable discussion about the use (and misuse) of Cronbach alpha).

The limitations of the present studies are that the result - even if argued to be possible to generalize to other work settings than media offices - *is not a study of definitive cause-effect relationships*. Hence, it is not proposed that the

revealed relationships among the variables of interest are *the definitive model of explanation*. Alternative models, including variables, and interpretations do exist. The present conceptual research model is one possible research model among others possible, based on the literature review of important empirical and theoretical connections among important explaining variables.

For causal inference, longitudinal studies will commonly provide more information than cross-sectional studies (Berglund, Jaakola, Raw, & Valbjorn, 1996). As suggested, cross-sectional studies may be appropriate in an initial and earlier stage of research, but the longitudinal study requires that the researcher know beforehand what is to be repeatedly measured. Therefore, the design of the present thesis work was to start with a pilot interview study and then to perform cross-sectional surveys and follow up the result with an interview study with respect to the revealed results from the survey studies.

Correlational designs that measure all variables at the same time will risk the threat of reverse causation, i.e. the measurement does not reveal if the cause came after or before the effect. The internal validity (that one variable causes another variable) is higher in studies that permit causal inference.

A second threat to the internal validity of the suggested research design is the risk of spuriousness. Spuriousness is the possibility that the observed association between two variables may stem from a third variable. To be able to counteract the risk of spuriousness, the researcher can include several control variables in the measures. The control variables in the current studies have been selected by examining earlier research, which has shown that age and gender, for example, may have an impact on the relationship between the other variables of interest. Busch (1995), among others found gender differences in perceived self-efficacy regarding complex tasks in word processing and spreadsheet software. Similarly, age can contribute to an over- or under-confidence in computer self-efficacy perceptions (Marakas, Mun & Johnson, see p.18).

There are also several possible biases with interviews and also with qualitative data analyses. Often the errors during an interview originate from three sources (see Fontana & Frey, 1994):

- 1) Respondent behavior, such as when the respondents give a socially desirable response to please the interviewer or to hide relevant information from the interviewer.
- 2) The wording of the question is misleading or wrong.
- 3) The interviewer has a bad questioning technique or affects the respondents in a negative way emotionally.

The data analyses of qualitative data can be (and surely always are) affected by the interviewers pre-understanding of the phenomenon of investigation. A strategy to handle this bias is that the researcher gives information about the nature of her pre-understanding.

3.4 CHOICES OF SAMPLE AND RESPONDENTS

The selection of newspaper offices and respondents was based on the criteria of a sufficiently large heterogeneous sample. The sample method was used in order to be able to use the knowledge of the population of interest - gender, experience, type of work, age, etc. The reason for choosing this type of sampling was the necessity to find respondents that were representative and typical of Swedish journalists in general. Practical and economical circumstances limited the possibility of using a probability and random sampling method. In research terms, "representative sample" means that the sample has "approximately the characteristics of the population relevant to the research in questions" (Kerlinger, 1986, p. 111).

A large sample will reduce the risk of large errors. Statistics calculated from larger samples are more accurate, given every other thing equal, than those calculated from small samples. A suggested rule-of-thumb is to use ten subjects for each variable.

The selection was performed in two steps. First, contact was made with several newspaper organizations, nine of which were selected. In a second step, 334 Swedish newspaper journalists from these nine offices were selected.

3.5 THE MEASURES

Table 1 describes and summarizes the measurement instruments² in the survey studies.

The choice of measure was based on the criteria of variables that have been validated in earlier research or suggested by authorities in the field. Since other measurement instruments were not available, they were developed by the author. For a more detailed description of each variable, see Appendix B. In section 3.5 the variables are described in connection to the relevant study.

² The entire questionnaire is available at: <http://www.hhs.se/SecP/Staff/Balsvik.htm>

Table 1. *The measurement instruments.*

* Indicates that the measure is adjusted for the present study by the author.

** Indicates that the measure is translated to Swedish by the author for the present study.

*** Indicates that the measure is developed by the author for the present study.

1A Perception of IT		
<i>Measurement instrument</i>	<i>Scale and number of items</i>	<i>Developed by/inspired by</i>
<i>IT-communication work outcome **</i>	Two subscales with 16 items on a 7-point scale ranging from “decreased a lot” to “increased a lot”.	Klebe Trevino & Webster, 1992.
<i>Solving challenging work problems **</i>	11 questions on a 6-point scale ranging from a source of information is not mentioned to a source of information is most helpful.	Teigland & Birkinshaw, 1999.

1B IT-usage at work		
<i>Measurement instrument</i>	<i>Scale and number of items</i>	<i>Developed by/inspired by</i>
<i>Internal electronic media usage **</i>	8 questions on a 7-point scale ranging from “yearly or less” to “several times a day”.	Teigland & Birkinshaw, 1999; Teigland, 1999.
<i>External electronic media usage **</i>	6 questions on a 7-point scale ranging from “yearly or less” to “several times a day”.	Teigland & Birkinshaw, 1999; Teigland, 1999.
<i>General IT-usage at work</i>	3 questions that measure the frequency of intranet, email, and Internet usage at work. The questions range from “not at all” to “more than four hours per day”.	Truedsson & Sjöberg, 2000.
<i>Communication at work</i>	3 subscales with 15 items, ranging from “never” to “several times a day”.	Bälter, 1998.
<i>Number of years of e-mail, intranet*, & Internet usage at work.</i>	3 questions ranging from “less than 1 year” to “more than 5 years”.	Truedsson & Sjöberg, 2000.

1C Creativity		
<i>Measurement instrument</i>	<i>Scale and number of items</i>	<i>Developed by/inspired by</i>
<i>Self-reported creativity*</i>	16 items on a 5-point scale ranging from “strongly disagree” to “strongly agree”.	Sjöberg & Lind, 1994.

1D Attitudes		
Measurement instrument	Scale and number of items	Developed by/inspired by
<i>General computer attitude **</i>	2 questions. The questions employ a 5-point response formatted scale ranging from “strongly disagree” to “strongly agree”.	Torkzadeh, Pflughoeft, & Hall, 1999.
<i>General IT attitudes (towards e-mail, intranet, and Internet usage at work)</i>	3 questions that employ a 7-point response formatted scale ranging from “extremely negative” to “extremely positive”.	Truedsson & Sjöberg, 2000.
<i>Specific IT attitudes (towards e-mail, intranet, and Internet usage at work)</i>	20 items on a 7-point polar scale, ranging from “extremely bad” to “extremely good”.	Fishbein & Ajzen, 1975. Klebe Trevino & Webster, 1992.

1E Perceived efficacy		
Measurement instrument	Scale and number of items	Developed by/inspired by
<i>General work self-efficacy*</i>	10 items on a 4-point scale, ranging from “strongly disagree” to “strongly agree”.	Schwarzer, 1993; Källmén, 2000.
<i>Computer self-efficacy *, **</i>	9 items on a 10-point scale ranging from “not at all confident” to “totally confident”.	Compeau & Higgins, 1995; Compeau, Higgins, & Huff, 1999.
<i>Internet self-efficacy***</i>	4 items on a 10-point scale ranging from “not at all confident” to “totally confident”.	Inspired by the Computer self-efficacy scale developed by Compeau & Higgins, 1995; Compeau, Higgins, & Huff, 1999.
<i>Intranet self-efficacy ***</i>	4 items on a 10-point scale ranging from “not at all confident” to “totally confident”.	Inspired by the Computer self-efficacy scale developed by Compeau & Higgins, 1995; Compeau, Higgins, & Huff, 1999.
<i>Creative efficacy**</i>	3 items on a 7-point scale ranging from “strongly disagree” to “strongly agree.”	Tierny, 1997.

1F IT-skill, experience & interest		
<i>Measurement instrument</i>	Scale and number of items	Developed by/inspired by
<i>Computer skill</i>	6 items on a 5-point scale ranging from “very bad” to “very good”.	Truedsson & Sjöberg, 2000.
<i>Interest in work*</i>	19 items on a 7-point scale, ranging from “totally uninteresting” to “interests me extremely strongly”.	Sjöberg & Lind, 1994.
<i>IT/Computer experience*</i>	12 items that assess the respondents’ experience of the use of computers, Internet, intranet, and email. Ranging from “none at all” to “very big”.	Truedsson & Sjöberg, 2000.
<i>Behavioral intention to use Internet and intranet at work*</i>	2 questions with 3 items on a 7-point scale that assess the respondents’ intention to use Internet and intranet, in the future. Ranging from “to an extremely high degree” to “not at all”.	Henry & Stone, 1997.

3.5.1 Background variables

In addition to the variables listed in Table 1, the studies also included some background variables. Age and gender were used as control variables in order to get an unbiased measurement of the dependent variables. The choice of these variables is spurred by earlier empirical studies of human-computer interaction. The intention was to control for undesirable effects on the observed associations by controlling for time threats, reverse causation, and spuriousness. These threats will be discussed further on. The suggested variables may be working as confounding variables when measuring the effects of the main independent variables on the dependent variables.

3.5.2. The dependent and independent variables

3.5.2.1 *Dependent variables*

Dependent variables in Study 2

Perceptions of IT were measured by the scale *IT-communication work outcome*. The construct is adapted from Klebe Trevino and Webster (1992), and adjusted

and translated for the present study. The measure consists of two scales measuring the impact of technology on communication effectiveness in general and on the quantity of communication.

Usage of communication channels was measured by several scales:

- *Internal electronic media usage.* Teigland (1999) influences this measure and it was adjusted to the present study. Respondents were asked how often they use the following information channels at work: (1) the company's intranet, (2) company databases, (3) electronic phonebook, (4) company documents and reports, (5) company discussion forums, bulletin boards, electronic communities, etc., (6) e-mail, (7) phone, and (8) fax.
- *External electronic media usage.* The measure is influenced by Teigland (1999) and it asks the respondents how many times a week they use the following communication forums with others outside their organization: (1) Internet, (2) electronic communities, (3) private e-mail lists, (4) e-mail, (5) phone, and (6) fax.
- *Communication at work.* The instrument, developed by Bälter (1998), consists of three subscales that measure in what manner and how frequently the respondents use various forms of communication channels for different purposes. These subscales were used as a summarized measure of communication usage at work.

IT-usage at work was measured by several scales:

- *General Internet usage at work.* Adapted from Truedsson and Sjöberg (2000). The respondents were asked how often they use Internet at work (questions ranging from *not at all* to *more than four hours per day*).
- *General intranet usage at work.* Adapted from Truedsson and Sjöberg (2000). The respondents were asked how often they use the intranet at work (questions ranging from *not at all* to *more than four hours per day*).
- *General e-mail usage at work.* Adapted from Truedsson and Sjöberg (2000). The respondents were asked how often they use e-mail at work (questions ranging from *not at all* to *more than four hours per day*).

Dependent variable in Study 3

- *Self-reported creativity* was measured by a scale developed by Sjöberg & Lind, 1994. The respondents were asked to judge their own creative potential on 16 items.

3.5.2.2 Independent variables

Independent variables in Study 2

Attitudes were measured by the following scales:

- *Attitudes towards IT-usage at work.* Attitudes towards IT-usage at work were measured by a scale developed for the present study and inspired by Fishbein and Ajzen (1975) and Klebe Trevino and Webster (1992). The composite scale consisted of 20 items on a 7-point scale with two extreme points (statements with answers ranging from *extremely bad* to *extremely good* and a neutral point (*neither good nor bad*).
- A scale adapted from Torkzadeh (1999) measured *general attitude towards computers*. The scale was translated to Swedish by the author. The two questions were worded as follows: *I feel I have a positive attitude towards computers*, and *I feel that computers are helpful and useful*. The questions employ a 5-point response formatted scale ranging from (1) strongly disagree to (5) strongly agree.
- *General attitude towards Internet usage, intranet usage, and e-mail usage at work.* The respondents were asked, by means of three direct questions, to rate their attitude towards the use of Internet at work, towards e-mail use at work, and towards intranet use at work. All three questions were adapted from Truedsson and Sjöberg (2000).

Efficacy beliefs were measured by the following scales:

- *General work self-efficacy.* Schwarzer (1993) originally developed the scale which was translated into Swedish and validated by Källmén (2000). The scale was modified for the present study. The ten questions measure to what extent the respondents feel confident regarding handling different circumstances at work.
- *Computer self-efficacy (CSE).* The scale is adapted from Compeau and Higgins (1995) and Compeau, Higgins, and Huff (1999). Since a Swedish version of the scale was missing, the original scale was translated into

Swedish for the present study by the author. The scale consists of nine items on a ten-point scale that asks respondents to describe their confidence in using the computer.

- *Intranet self-efficacy.* The instrument is based on the Computer self-efficacy scale (see Compeau & Higgins, 1995; Compeau, Higgins, & Huff, 1999). Since a Swedish version of the scale was missing; a scale was developed for the present study by the author. The questions ask the respondents to describe their confidence in using the intranet at work.
- *Internet self-efficacy.* The instrument is based on the Computer self-efficacy scale. Since a Swedish version of the scale was missing, a scale was developed for the present study by the author. The scale includes four items on a 10-point scale that asks the respondents to describe their confidence in using Internet at work.

Work Interest and IT competence were measured by the subsequent scales:

- *IT/Computer skill.* The scale is adapted from Truedsson and Sjöberg (ibid). The scale consists of six items that ask respondents to describe their skill with computers on a 5-point graded scale with extreme points ranging from (-2) *very bad* to (2) *very good*.
- *Interest in work.* The scale was developed by Sjöberg and Lind (1994). It was modified for the context of the present study and it consists of 25 statements regarding journalistic work tasks. The items are in the form of a 7-point Likert scale rated from *absolutely uninteresting* to *interests me very strongly*.
- *IT/computer experience.* The scale was adapted from Truedsson and Sjöberg (2000) and consists of 12 questions that assess the respondents' experience of the use of computers, Internet, and e-mail. A question was added to the scale in order to measure the respondents' experience of intranet usage.

Independent variables in Study 3

Some of the scales that were used as dependent variables in Study 2 were used as independent variables in Study 3 (for a description of each scale, see Appendix B):

Perceptions of IT were measured by the scale *IT-communication work outcome*.

Usage of communication channels was measured by the scales:

- *Internal electronic media usage.*
- *External electronic media usage.*

IT-usage at work was measured by the following scales:

- *General Internet usage at work.*
- *General intranet usage at work.*
- *General e-mail usage at work.*

Demographic variables like educational level, number of years at department, number of years of employment, age, and number of years in occupation were also measured and used as independent variables in both Study 2 and Study 3.

3.6 PROCEDURE

3.6.1 Reliability and validity tests of the questionnaire

To assure that the measures of IT-usage used in the study are related to an external construct, a test of the external validity was performed. The ambition was to test the reliability as well as the validity of the overall measure instruments. The external variables that were used are adapted from Henry and Stone (1997), translated and adjusted by the author for this specific study. The variables were:

- *Behavioral intention to use Internet* and
- *Behavioral intention to use intranet.*

Behavioral intention should theoretically be related to the independent variables as depicted in Figure 5 (p. 48), since individuals scoring high on behavioral intention to use IT are assumed to be willing to expand the use of both intranets and Internet at work. The specific items were:

- *I intend to spend more time at work using Internet*
- *I intend to learn how to use Internet more fully in my job*
- *I intend to integrate Internet into work more*
- *I intend to spend more time at work using the intranet*
- *I intend to learn how to use the intranet more fully in my job*
- *I intend to integrate the intranet into work more*

Behavioral intentions were predicted to be positively and significantly correlated to computer self-efficacy, general work self-efficacy, and general computer self-efficacy. This in turn should indicate that the three scales are related to the external construct (behavioral intention).

3.6.2 Method

3.6.2.1 *Focus group*

A focus group was invited with the purpose of discussing the questions in the questionnaire and securing the face validity. Six journalists from three different work places were asked to discuss the mail questionnaire on the same occasion. Each of the respondents were able to give feedback about the measures, wording of items, content of items, difficulty level, the structure of the questionnaire, measurement process, and the overall comprehensiveness of the scales. The purpose was to get a possibility to revise the instrument according to the suggestions from the focus group.

3.6.2.2 *Factor analyses*

Factor analyses were performed of some of the scales used in Studies 2 and 3. Factor analysis is appropriate to use when the objective is to analyze the structure of the interrelationships among a large number of variables by defining a set of common underlying dimensions (for a description of factor analyses, see Hair, Anderson, Tatham & Black, 1998). The researcher is then able to identify the separate dimensions of the structure and can decide the extent to which each variable is explained by each dimension. Factor analysis differs from dependence multivariate techniques, such as multiple regression, because it is an independence technique in which all variables are simultaneously considered. However, it is still employing the variate, the linear composite of variables. Factor analysis can be used for either an exploratory or confirmatory perspective. In the present research an exploratory purpose was chosen, since the objective was to search for a structure among a set of variables, not an *a priori* determined by previous research or a theoretical model.

There are some assumptions that should be considered when deciding if factor analysis is appropriate to use. First, the partial correlation among variables should be small; otherwise there is no underlying factor. The partial correlation among variables was examined through the anti-image correlation matrix obtained by the SPSS program employed in the current analyses. Also the Bartlett test of sphericity, which examines the presence of correlations among the variables, was performed. Furthermore, the measure of sampling adequacy (MSA) was used. MSA measures the degree of intercorrelations among the

variables and the appropriateness of factor analysis. In the present analyses, the MSA measure was regarded in each analysis according to suggested guidelines by Hair, Anderson, Tatham, and Black (1998).

In order to interpret the factors in a meaningful way, an oblique rotation was conducted. The objective of a rotation of the factor matrix is to redistribute the variance from each factor to achieve a simpler, theoretically more meaningful factor pattern. Contrary to an orthogonal rotation method, oblique methods provide information about the extent to which the factors are actually correlated with each other. Since it is more realistic that very few factors are uncorrelated, and the aim with factor analysis is to obtain several theoretically meaningful factors or constructs, an oblique solution was chosen as appropriate in this case.

3.6.2.3 Data analyses in Studies 2 and 3

In order to investigate relationships between the variables of interest for the current studies, multiple regression analyses were employed. The objective of multiple regression analysis is to predict or explain a dependent variable from two or more independent variables. The sequential search methods estimate the regression equation with a set of variables and then selectively add or delete variables from further analysis until some overall criterion measure is obtained. There are two types of selection procedures: 1) stepwise estimation, and 2) forward addition or backward elimination. The principal distinction between these two selection procedures is that the stepwise approach allows adding or deleting variables at each stage of the procedure.

3.6.2.4 Data analyses in Studies 1 and 4

The purpose of the analysis was to look for expected patterns in data as well as to be open for new and divergent patterns. Different themes were discovered during the analyses of the data. The themes consist of both patterns of groups of statements and single unique statements.

In Study 4, in order to let journalists judge the circumstances of perceptions of creative versus non-creative work situations, the critical incident technique was adopted. The respondent was asked to describe two situations, one when he/she made a substantive creative work performance through IT-support, and another situation that was perceived to characterize a situation when the subject felt he/she failed to accomplish creative work through IT-support. The technique is adapted from the work of Burnside, Amabile, and Gyskiewicz (see p. 34) that used the critical incident technique in a study of 120 R&D scientists and technicians.

3.6.3 Using self-reported data

Self-reports may be a vulnerable source of data because it may have traps related to how the researcher chooses to word the questions, the format of the question and the question context (for an excellent discussion about self-reports as a data-collecting method, see Schwarz, 1999). One strategy to handle this bias is to include context manipulations in the design. One way to do this is to use certain techniques to determine if a certain question works out well. As a consequence of the possible fallacies with self-reported data, the following safeguards were included prior to the data collection in Studies 2 and 3:

- A focus group (see p. 61) was consulted in order to discover potential ‘cognitive traps’ in the wording, question order and alternatives of the questions in the questionnaire.
- The open-response format was used in the questionnaire, when possible, in order to avoid systematic misleading results due to vague quantifiers (“frequently”, “sometimes”, etc. can be interpreted differently under certain circumstances).
- The respondent’s anonymity and confidentiality were assured in the data collection procedure as well as in the data presentation (e.g. to avoid responses of social desirability).

4. STUDY 1. JOURNALISTS' ATTITUDE TOWARDS AND USAGE OF ELECTRONIC NETWORKS

4.1 INTRODUCTION

In spring 1998 a minor exploratory interview study was performed. The study mainly aimed to examine a general research question:

How have electronic media been integrated into the daily practice at news offices? Specifically, how and why are electronic networks used among Swedish daily newspaper journalists?

The study was also expected to give valuable information for the development of the items used in the questionnaire in the subsequent studies. The interview questions are reported in Appendix C and can be summarized as follows:

- How can electronic networks be used to spread and share information at journalists' worksites?
- How do journalists use electronic networks at their worksites today as a tool for communication, information exchange and for increasing the professional skill?
- Have electronic networks changed the journalist's professional skill and competence?
- How can journalists use electronic networks in the future as a work tool?

4.1.1 Participants

Six journalists employed at papers/magazines published on the Internet were interviewed. The journalists were interviewed at their work offices in 1998. The respondents were selected on the grounds of their extensive experience in and knowledge of IT-usage. The selection was made through the snowball technique.

4.1.2 Method

The aim of this study was, by the use of induction, to try to understand how electronic networks are used among media professionals today and to give an explorative view of theories that could be useful to test against the empirical data.

4.1.3 Procedure

Each respondent was informed about the aim of the interviews and was assured anonymity. Interviews with each subject were conducted during approximately 1-1, 5 hours per occasion. The semi-structured interviews were taped and transcribed.

4.2. RESULT

4.2.1 How do journalists use Internet at work today?

Internet is for several of the interviewees a tool for gathering and exchanging information, and a way to communicate with both the readers of the paper and colleagues. Internet is also a way of establishing contacts initially. An example:

"Maybe you are looking for a subject and then you'll find either a journalist that has written something or interviewed someone (in the article) and this could be in a paper that I would never actually read. And then I find out there is an expert on this subject at a certain University. I would not contact the journalist that wrote the article; instead I would certainly contact the expert directly. Our job is to search for information and to mirror the world, and Internet is much more the world than anything else right now... We can't travel around the world, but you could use Internet to do an article with spice from the whole world. Sometimes this makes the articles you write so much more interesting."

The most usual way of using electronic networks by these journalists is reading and answering e-mail or to make a first contact with someone the journalist eventually is planning to interview. Journalists also frequently read other newspapers published on the Internet, or search websites (e.g. new sites) for a certain subject or for an expert on a subject before writing an article. A case in point described by a respondent is when the journalist wants an interview with a certain music group. Then he/she would search for information at different websites by means of some of the search motors available. Perhaps he would find a name of the record company responsible of the group. On the homepage of the record company he would probably find some persons to make a first contact with via e-mail. The record company would then probably send the journalist some information, such as press releases or digital photographs of the music group. After having obtained this information, the journalist would be able to prepare an interview with the group.

4.2.2 Ways of communicating and collaborating

The usual way of communicating in collaborating situations by means of electronic networks is by e-mail. Another tool for journalistic collaboration is chat programs. An example of collaborative work is sending weekly reports by e-mail to the one's superior. Another example is when two or more persons collaborate in writing a book or article and send drafts to each other by e-mail. This is not surprising, however, research has shown that e-mail today is a tool used for multiple reasons document delivery, storing personal names and addresses and scheduling appointments, to mention some. One journalist says that a lot of the projects grow by corresponding via e-mail, often without any form of face-to-face meeting or other contacts during the progress of work.

One of the journalists, however, pointed out that he seldom uses the e-mail for interviews, nor for a first contact. He wanted to make sure he got an appointment with a person right away, without having to wait for an answer by e-mail.

4.2.3 Sharing communication and information

The most common way of sharing information with other journalists is by e-mail, often by means of distribution lists that only include journalists. Another way is to share information in discussion groups:

"WWW could stand for a Very Friendly World, because the interesting thing with Internet is just that it appears so friendly. When you get information from someone else in a discussion group, you get the feeling that you want to be friendly in return".

The type of information shared is often a tip of excellent websites or news agencies. The information that is collected through Internet is usually news, reports or information about a particular phenomenon or person on different homepages.

4.2.4 Internet can be unreliable

A problem for some of the interviewees is that although Internet, especially World Wide Web, is rich sources of information, a journalist can seldom rely on that source completely. There is almost always the necessity to check if the source is genuine and reliable. One respondent gives an example of this:

"If it is something important that I'm suppose to write about, I would always phone to check the source, I would never write an article based on something

I've received by e-mail. If I read an article on the net on of the larger newspapers, then I would trust the author in having done good journalistic work. But not always...Your own experience is important, in time you learn which papers and journalists you can trust. Internet is very varying, it is important to check, because the information is not open-dated. Well, then you can't be sure the information is correct... You always have to check the big core question in an article".

4.2.5 E-mail as a tool in making new contacts

Some of the interviewed journalists meant that they communicate a lot more with the readers of the paper today than earlier. The reason for this, according to the respondents, is the possibility to receive and send e-mail. For several of the respondents the first contact with a person, e.g. a person that the journalist wishes to interview, is made by e-mail. The next step is to make contact by phone. Sometimes, however, also interviews are performed via e-mail. E-mail is seen as a useful tool when making interviews. Although the amount of contacts with people has increased thanks to e-mail, technology seems to have made every single contact or communication shorter and briefer.

4.2.6 The chosen strategies of learning how to use Internet

All of the respondents have learnt to use Internet by themselves, though one of the journalists said that a colleague introduced him to Internet at first. Three persons describe the learning as a process that one has to go through before being able to use Internet in a useful way. Most of the interviewed people have learnt a method of sifting information and to find out which search motors are most effective and useful. One of them suggested his own way of finding the ultimate search method on the Web:

"It is like doing the recruit training at military service. I found out that the good ones (websites) had links to other good sites. In my job I have learnt a way of speeding up to find the trends, the pattern of information; this by noticing how often a word, a phenomenon is being used"

4.2.7 What are the advantages of Internet use in the journalistic profession?

The respondents meant that the use of Internet has made them more effective, and as a consequence has saved a lot of time in research work. The journalists have learnt to find information faster and to choose what information is most important. According to some of the journalists, information technology could be responsible for carelessness, though. In the past, before the technology era, the journalist had to process the story in his mind before actually writing it

down. The story was then already reflected on and formulated before being written. Because of the possibility to 'cut and paste' there can sometimes be difficulties in getting continuity in the written text. It is easier to be careless, as one person pointed out.

Internet can also contribute to changing the journalist's own view of his/her profession. In the past, the traditional view of journalism was that the journalist should be considered a "*third state authority that is searching for the objective truth*". Today, due to the huge quantity of information available, the attitude towards the journalistic role might go through a change. There are no single average readers; instead the readers of the publications are different people with different views. One of the respondents describes his insight like this:

The information technology, Internet, has changed me from a human viewpoint. I have got a more extended, all-round education about what the world looks like and how people think. We are not objective; I found the paper by my valuations, filled with sources of error and subjectivity, but also with truth (.) I have got a more extended view, the reader is not just Nisse (the stereotype of the reader, authors comment) in Bagarmossen. The reader is much more than that."

4.2.8 From information towards relation

The job done by the journalists is also described as a "*relation media*", where the trust is built by giving the newspaper reader relevant and accurate information. By doing this, the reader will hopefully find the paper trustworthy and there will be a kind of close relationship between the paper and the reader. An example of this strategy is the links that are placed at the end of an article published on the Internet. In this way the journalist gives the reader the possibility to check the source and to find more information:

"Our work is to have a communication and relation with people out there. Hence, the result is a consequence of that relation..."

One journalist made a comparison with his work at a traditional newspaper-office. There, he said, the purpose of any kind of communication is to reach a result; e.g. if phoning a person one wants the call to result in an interview. Today the communication can be taken without reaching any direct or immediate result. The purpose is to give information and to foster relations with the reader. This is interesting, since – as Sproull & Kiesler (1986) argue – electronic communication can increase the informational and emotional connections among employees. Hence, the connections between the journalist and reader seem also to be strengthened by the use of Internet. The new focus on the *relation with the reader* could be a part of a new growing attitude regarding

who the reader is and what kind of communication or relation the journalist wishes to have with the reader.

4.2.9 Internet has changed one's view of the reader

Some of the journalists meant that they have developed a greater respect and humility for other people thanks to Internet. Having gotten access to much more information and a lot more contacts with people, the complexity of issues is clearer to them and, as a result, so is the respect for human knowledge.

"Thanks to Internet one gets an on-the-spot-account of all human collected knowledge and experience. This, we have never, ever had before"

"My humility has changed a lot. We are close to the reader; this is the reason for changing one's attitude...."

Some of the respondents also argue that this 'closeness' could lead to an increase in the quality of the written articles. A combination of the publishing tradition and "the democracy of the reader", e.g. the possibility for the reader to respond directly to the journalist and to participate in discussion groups, could be the origin of better material, and therefore better articles.

4.2.10 Developing the professional skill?

According to the journalists the access to a lot more information thanks to Internet has lead to a more extensive *all-round education*. Although the information is available on the Internet, there is no sure knowledge without some research done to check the information, as one journalist puts it. As mentioned before, the increased awareness of how much there is to know and how much knowledge people 'out here' have, has given the journalists a sense of greater humility.

These journalists are of the opinion that the craftsmanship that they possess has nothing to do with understanding technology. Technology in itself is a tool and infrastructure for gathering information. The professional skill and knowledge concerns the ability to write an article, to have a stylistic talent and to be able to design an article and, also, to be able to find relevant information. To a great extent, the search for information is done via Internet today. None of the interviewed respondents used any other source as much as Internet.

According to the respondents, there is a need to be able to write in a briefer way nowadays, because it is not convenient to read lengthy articles published on the Internet. To read from a computer screen is about 25 percent slower than to read

an ordinary paper and the reader gets a feeling of unpleasantness when reading online texts. The content and form of the article are the same as earlier though, according to the respondents. One of the respondents said he had a feeling that the reader of a paper published on the web has a greater indulgence with the language compared to the reader of an ordinary paper.

4.2.11 Internet as control of journalistic work

Some of the respondents meant that by publishing on Internet, the possibility of checking the sources of the article increases for the reader. By giving the sources on the Web to the reader, the journalists argue that the general public has a greater opportunity to criticize their work. The argument is that it is easier for the reader of a network paper to make contact with the journalist responsible of a certain article. The reason for this is the possibility for the reader to respond directly and more easily by sending e-mail than by phoning. The contact is much easier to make by e-mail. One respondent argued that, by calling a person you get a feeling of "invading that person's life". It is smoother to send an e-mail with critical opinions:

"...You get a feeling of having handled the matter and then you can forget all about it. Being a journalist is to expose oneself, and you really have to know what you are doing".

4.3 CONCLUSION

The explorative interview study resulted in two main findings of attitudes, which can be interpreted as follows.

- 1) A focus on the relation with the reader, including easier communication access between the reader and the journalist.
- 2) A focus on more structural changes due to IT-usage. Electronic networks are mainly seen as efficient work tools.

The result of the study also contributed with some information to be used in the development of questions for the further studies. Especially the following questions emerged as important to follow up:

- Attitudes. How are attitudes related to IT-usage among journalists?
- IT-skills. How are personal efficacy and skill in handling IT-applications related to IT-usage and creativity?
- Experience of IT. How are experience of IT-usage related to IT-usage and creativity?

To summarize the results of this explorative interview study, the journalists' attitudes towards electronic networks (Intranet, Internet, and e-mail) at work can be described as follows. All journalists had acquired knowledge about *how* to integrate and use especially Internet in their existing work procedures. The acquired knowledge had been distributed and shared at the workplace through the practical use of Internet. For example, the journalists share knowledge about web sites with each other, and they use several sources on the Internet when writing articles. The tips are shared both directly, through exposing links and by tips given to each other by e-mail, and indirectly in the articles.

By experience and awareness of the complexity of society and the world - and with a new view of the audience - a new approach towards media as a whole may be emerging. An interpretation is that this indicates a possible development of a closer relationship between the journalist and the reader. In the long run, this may have effects on the quality of the papers, as proposed by some of the respondents. The findings from the interviews indicate that:

- E-mail is the communication tool most frequently used by these journalists.
- Internet can be a cause of difficulties with unreliable sources.
- Journalists must be able to write shorter articles if they are publishing on the Internet.
- The type of information shared among journalists is often tips of useful links to websites or sources.
- E-mail is mostly used for interviews, for information exchange and for making a first contact.
- Journalists must develop a skill of sifting information in order to use Internet efficiently.
- Web-published papers could foster a closer relationship between the journalist and the reader.
- The journalists reported a feeling of having got a more extended all-round education through the use of Internet.

The results can be summarized in two main findings:

Firstly, the attitude, which focuses on the *relation with the reader*, is notable. More specifically:

- The journalists' main focus is on the relation with the reader. This view might be part of a growing awareness for the reader and for what kind of communication the journalist wishes to have with the reader.
- Internet is by most of these journalists viewed as a tool in making new contacts with people in an initial phase.

- The increased awareness of how much there is to know and how much knowledge people 'out there' have seems to have given some of the journalists a sense of increased humility.

Secondly, a prominent view is the attitude towards electronic networks as tools for structuring and handling work more efficiently. The view can be summarized as follows:

- The access to a lot more information thanks to the use of Internet has lead to a more extensive all-round schooling among these journalists.
- Internet is seen as an infrastructure for handling work in a better and more efficient way.

Internet is perceived as a control system of journalistic work. According to the journalists, newspaper readers have better access to the sources of the articles due to Internet and its information possibility.

5. STUDY 2. JOURNALISTS AS IT-USERS: GENERAL VERSUS SPECIFIC MEASURES OF SELF-EFFICACY AND ATTITUDES

5.1 INTRODUCTION

The purpose of the present study was to answer the second research question. A decision was made to investigate IT-work among journalists as a population in order to answer the research question:

- *Which are important perceived aspects that can explain Swedish daily newspaper journalists' perceptions of the effects of IT on communication at work and IT-usage at work?*

It was examined how much of the variance in IT-usage at work and communication at work can be explained by attitudes, efficacy beliefs, work interest, and IT competence variables. Explanatory variables chosen among those variables seen as important in the review of earlier research in chapter 2 were tested in the study (see Figure 5, p. 48). An immense number of indices were included in this study. Stepwise multiple regression analysis was employed in order to explain the variance in the dependent variables.

5.1.1 Hypotheses

In order to investigate the interrelations between the explanatory variables and the dependent variables, some hypotheses were tested. The background and logic of the derived hypotheses is discussed in chapter 2. Figure 6 (p.83) illustrates the hypothesized relationships between the variables. In the present study, hypotheses 1- 4 were tested:

H1: Specific self-efficacy (i.e. computer self-efficacy, Internet self-efficacy, and intranet self-efficacy) is positively related to measures of IT-usage at work and measures of communication at work.

H2: Specific self-efficacy (i.e. computer self-efficacy, Internet self-efficacy, and intranet self-efficacy) explains more of the variance in measures of IT-usage and measures of communication at work than does general self-efficacy.

H3: There are significant gender differences in self-efficacy (i.e. computer self-efficacy, Internet self-efficacy, and intranet self-efficacy) in favor of men.

H4: There are significant differences between the two extreme groups scoring low and high in self-efficacy beliefs (i.e. computer self-efficacy, Internet self-efficacy, and intranet self-efficacy) regarding general computer attitude, general and specific IT attitude factors, IT/computer skill, IT/computer experience, measures of IT-usage, and measures of communication at work.

5.1.2 Sample

The selection of newspaper offices and the respondents was based on the criteria of a sufficiently large heterogeneous sample (for a discussion about choices and considerations of statistical methods, see chapter 3). The sample method was used to enable the use of knowledge of the population of interest - sex, experience, type of work, age, etc. The selection was performed in two steps. First, contact was made with several newspaper organizations, nine of which were selected. In a second step, 334 Swedish newspaper journalists from these nine offices were selected.

5.1.3 Procedure

During spring 2000 to autumn 2000 a mail survey - including both questions for Study 2 and Study 3 - was conducted. Contacts were made with personnel departments or managers at each newspaper office. The respondents were sampled from both local daily newspapers and national daily newspapers publishing both on-line and as a traditional newspaper. The questionnaires were distributed by mail. Instructions were sent with the questionnaire, together with an envelope ensuring anonymity. 165 Swedish journalists at nine national and local newspaper offices responded the questionnaire. The total response rate was 49.4 percent (165 out of 334). Large efforts were made in order to get as many answers as possible. A reminder was sent on two occasions, one by mail and one by e-mail. Personal telephone contact was also taken during the autumn with those who still had not answered the questionnaire. This work increased the response rate from approximately 20 percent to nearly 50 percent.

The mean age was 41 years. Approximately 34 percent were 41-50 years old. Of the respondents, about 30 percent were between 18-40 years old, and 44 percent were older than 41 years. Further, 37.6 percent of the respondents were female and 61.2 percent of the sample had higher education. Mean years in occupation were 18.5 years ($SD=10$).

5.2 THE SURVEY

5.2.1 Development of questionnaire

The questionnaire included 19 scales and background questions. The items were to be rated in Likert-type scales. The scales were either developed by the author or adapted from previous research. Some scales were back-translated from English to Swedish, whereas others were in English in original. The scales developed by the author for the present study were based on an interview study (Study 1).

The questions and measures are described more in detail in Appendix B. Below, the scales are introduced briefly. Figure 5 (p. 48) illustrates which variables were used from the original conceptual research model.

5.2.2 Indices

A factor analysis procedure with oblique rotation (oblimin) was used with the purpose of summarizing, simplifying and interpreting underlying structures of the attitude and interest scales. The following scales were analyzed:

Attitudes towards IT-usage at work. A factor analysis of the attitude scale gave a three-factor solution. A *KMO* measure (.758) and *Bartlett's Test of Sphericity* ($p = .000$) showed that the data were acceptable for factor analysis. Due to a negative sign in the item-total correlation, three items were excluded from further analyses. In Table 2, the result from the principal component analysis is presented. The total variance explained from the three-factor solution was 47.2 percent. The factors extracted are interpreted as (1) Attitude towards IT as a communication tool, (2) Attitude towards IT as something that enhances stress and information overload, and (3) Attitude towards IT as a tool for cooperation.

Table 2.
Three-factor analysis of Attitude towards IT-scale.

Variable	Factor loading		
	1	2	3
	IT as a communication tool	IT as a source of stress and information overload	IT as a tool for internal cooperation
Internet leads to better cooperation with people outside the newspaper office	.75		
E-mail simplifies the communication with people outside the newspaper office	.73		
Internet simplifies the communication with people outside the newspaper office	.71		
The e-mail usage tends to split up the workday too much		.84	
The e-mail usage leads to increased technology stress		.80	
The e-mail usage results in too many incoming e-mails		.79	
The e-mail usage leads to many shallow contacts between people		.71	
The information available on Internet is difficult to evaluate		.42	
The usage of the intranet improves the quality of the cooperation at the editorial office			.89
The intranet simplifies the communication with colleagues at the newspaper office			.87
E-mail is useful in the cooperation with colleagues at the newspaper office			.45

Interest in work. The items of the interest scale were also analyzed through a principal component factor analysis. A *KMO* measure (.795) and *Bartlett's Test of Sphericity* ($p = .000$) showed that the data were acceptable for factor analysis. In Table 3, the result of the principal component analysis is presented. Items that loaded smaller than .40 were excluded from further analysis. The variance explained was 47.9 percent. The three dimensions from the factor analysis are interpreted as (1) Interest in traditional journalistic work, (2) Interest in cooperation, contacts, & individual development, and (3) Interest in technological interview methods.

Table 3.

Three-factor analysis of Interest in work scale.

Variable	Factor loading		
	1	2	3
	Traditional journalistic work	Cooperation, contacts & individual development	Technical interview methods
Research	.79		
Writing articles	.75		
To perform interviews via telephone	.75		
To perform interviews traditionally	.75		
Contacts with the readers	.68		
To inform the public	.58		
To solve work tasks independently	.55		
Cooperation with the closest work group		.72	
Cooperation with people external to the news office		.66	
To solve work tasks in group		.63	
Own further education		.60	
New computer systems or new technique		.59	
To have a good income		.56	
Management		.46	
International contacts and cooperation		.40	
To perform interviews by fax			.86
To perform interviews by e- mail			.86

Note. Loadings below .40 are not shown in the table.

5.3 DESCRIPTIVE RESULT

In Table 4, descriptive statistics including mean, standard deviation, and reliability of index are reported. A reliability level of .70 is desirable. The correlations between self-efficacy and the other variables in the study are reported in Table 5.

Table 4.

Descriptive statistics and reliability of variables (Study 2)

Variable	M	SD	Cronbach alpha (α)
General computer attitude (0-5)	0.70	0.87	0.65
Gen. attitude towards Internet usage at work (+3- -3)	1.95	0.76	N/A ^a
Gen. attitude towards email usage at work (+3- -3)	1.79	0.79	N/A ^a
Gen. attitude towards intranet usage at work (+3- -3)	1.09	0.92	N/A ^a
Attitude towards IT as a communication tool (-3-+3)	-1.29	0.80	0.76
Att. towards IT as stress & inform. overload (-3-+3)	0.10	1.15	0.72
Att. towards IT comp. develop. & coop. (-3-+3)	0.24	1.48	0.84
General self-efficacy (1-10)	3.11	0.44	0.89
Computer self-efficacy (1-10)	5.67	2.02	0.93
Intranet self-efficacy (1-10)	5.00	1.84	0.89
Internet self-efficacy (1-10)	7.16	2.24	0.91
IT/Computer skill (0-5)	0.74	0.65	0.79
Interest in traditional journalistic work (1-7)	4.57	0.83	0.82
Interest in coop., contacts & ind. developm. (1-7)	3.82	0.87	0.7
Interest in technological interview methods (1-7)	1.28	1.12	0.79
IT/computer experience (-2 -+2)	1.33	0.54	0.85
Internal electronic communication (1-7)	2.62	1.11	0.78
External electronic communication (1-7)	3.85	1.37	0.8

Variable	M	SD	Cronbach alpha (α)
Communication at work (0-7)	1.03	0.65	0.88
General intranet usage (0-7)	2.85	1.88	N/A ^a
General Internet usage (0-7)	4.24	1.20	N/A ^a
General e-mail usage (0-7)	4.14	1.09	N/A ^a
Communication effectiveness (1-7)	0.91	0.68	0.87
Quantity of communication (1-7)	1.26	0.71	0.86
Number of years of e-mail usage at work (1-4)	2.42	.85	N/A ^a
Number of years of intranet usage (1-4)	1.90	.74	N/A ^a
Number of years of Internet usage (1-4)	2.52	.82	N/A ^a

^a Alpha cannot be assessed for single-item.

Table 5

*Correlation matrix of self-efficacy (SE) scales and variables in study 2.**N=165.*

Variables	General SE	Computer SE	Intranet SE	Internet SE
General attitude towards computers	.14*	.31**	.24**	.37**
General attitude towards Internet usage	.17*	.18**	.18*	.36**
General attitude towards e-mail usage	.19*	.17*	.20**	.27**
General attitude towards intranet usage	.19*	.18*	.12	.08
Attitude towards IT as a comm. tool				
	-.08	-.16*	-.18*	-.26**
Attitude towards IT as a source of stress and information overload	-.03	-.04	.02	-.26**
Attitude towards IT as a tool for cooperation	-.03	-.04	.02	-.26**
General self-efficacy	1.00	.25**	.22**	.28**
Computer self-efficacy	.25**	1.00	.63**	.64**
Intranet self-efficacy	.21**	.63**	1.00	.61**
Internet self-efficacy	.28**	.64**	.61**	1.00
IT/Computer skill	.27**	.59**	.43**	.58**
Interest in traditional journalistic work	.26**	-.04	.00	.03
Interest in cooperation, contacts & ind. development	.22**	.22**	.25**	.22**
Interest in techn. interview methods	.01	.06	.04	.11
IT/Computer experience	.11	.51**	.34**	.39**
Internal media usage ^D	.07	.15*	.07	-.00
External media usage ^D	.12	.23**	.31**	.35**
Communication at work ^D	.13*	.36**	.35**	.34**
General intranet usage at work ^D	.19*	.10	.10	-.01
General Internet usage at work ^D	-.02	.23**	.25**	.24**
General e-mail usage at work ^D	.04	.29**	.35**	.26**
Communication effectiveness ^D	.12*	.32**	.29**	.30**
Quantity of communication ^D	.14*	.34**	.38**	.33**
Nr. of years of e-mail usage at work	.09	.22**	.20**	.29**
Nr. of years of intranet usage at work				
	.16*	.09	-.00	-.07
Nr. of years of Internet usage at work				
	.11	.22**	.22**	.27**
Gender	.19**	.16*	.18*	.04
The work requires Internet usage	-.03	.12	.19*	.16*
The work requires intranet usage	-.02	.11	.00	-.06

* p < .05, ** p < .01 Note. Dependent variables are marked with a ^D.

5.4 MULTIPLE REGRESSION ANALYSES

The main results of the study are summarized below. The explanatory variables included in the study were:

Self-efficacy

- *General work self-efficacy*
- *Computer self-efficacy*
- *Intranet self-efficacy*
- *Internet self-efficacy*

Attitudes

- *Attitudes towards IT-usage at work* (i.e. attitude towards IT as a communication tool, attitude towards IT as a source of stress and information overload, and attitude towards IT as a tool for cooperation)
- *General computer attitude*
- *General attitude towards Internet usage, intranet usage, and e-mail usage at work* (three direct questions)

Skill, experiences & interest

- *IT/Computer skill*
- *IT/Computer experience*
- *Interest in work* (i.e. interest in traditional journalistic work, interest in cooperation, contacts and individual development, and interest in technological interview methods)

Some of the variables resulted from factor analyses performed, see chapter 3. Two questions measuring to what degree the respondents are required to use Internet and intranet in order to accomplish work tasks were included in the analyses. These two questions were coded as binary variables (0 = no and 1 = yes).

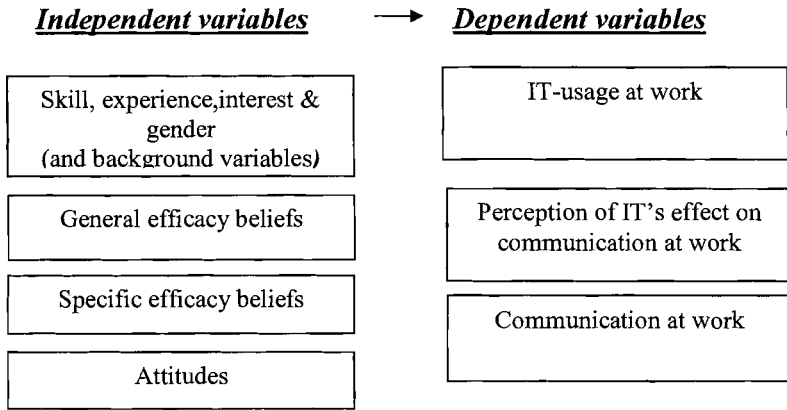


Figure 6. The conceptual framework of the hypothesized interrelated variables in Study 2.

Several simultaneous regression analyses with stepwise elimination procedures were performed in order to explain the variance in IT-usage at work. For the results of all regression models, see Tables 6-14. In order to examine group differences, t-tests were performed. The groups were selected on basis of their average on the variables gender and self-efficacy. The first group included individuals with the lowest average scores and the second group included individuals with the highest average scores.

5.4.1 Background variables

In a first step, regression analyses were performed with the background variables educational level, computer education, number of years of employment, age and gender as explanatory variables, and the IT-usage and communication measures as dependent variables. The variance explained in the various models estimated ranges from 2 percent to 9.7 percent. The four models with the highest R^2 -values were the following:

- *Educational level* ($\beta = .18$), *computer education* ($\beta = .16$), and *number of years of employment* ($\beta = -.15$) explained 7.4 percent of the variance in external electronic media usage.
- *Computer education* ($\beta = .17$) explained 2.6 percent of the variance in communication at work.

- *Gender ($\beta = .18$), number of years of employment ($\beta = .04$), and educational level ($\beta = .004$) explained 9.7 percent of the variance in general Internet usage at work.*
- *Number of years of employment ($\beta = -.22$) and computer education ($\beta = .17$) explained 7.8 percent of the variance in general e-mail usage at work.*

5.4.2 Attitudes

One of the main explanatory variables in the conceptual research model was attitude. Thus, a separate analysis of the attitude variables was performed. The highest variance explained was approximately 26 percent (see Table 6) in a model estimated for the dependent variable (the effect of IT on) *communication effectiveness*.

Table 6.
Summary of regression models after performing stepwise regression analysis with attitude variables as explanatory variables of IT-usage and communication at work (N=165).

Variables	<i>B</i>	<i>β</i>
Attitude towards IT as a communication tool	-.37	-.49*
Attitude towards IT as a tool for cooperation	.19	.26*
General attitude towards e-mail usage at work	.14	.16**

$R^2_{adjust} = .26$. * $p \leq .01$, ** $p \leq .05$.

5.4.3 Efficacy beliefs

Another main variable in the conceptual research model is self-efficacy. The self-efficacy variables general work self-efficacy, computer self-efficacy, Internet self-efficacy, and intranet self-efficacy were separately analyzed in regression analyses of IT-usage and measures of communication at work as dependent variables.

The variance explained ranged from 11-28 percent. Two models showed the highest R^2 -values: one model on *quantity of communication* and one model on *communication at work*.

- The variable intranet self-efficacy ($\beta = .38$) accounted for 13.7 percent of the variation in *quantity of communication*.
- Furthermore, computer self-efficacy ($\beta = .22$) and intranet self-efficacy ($\beta = .21$) explained 14.6 percent of the variance in *communication at work*.
- Regarding *IT-usage*, the self-efficacy variables explained maximum 11.8 percent of the variance in the models estimated. Computer self-efficacy, intranet self-efficacy, and Internet self-efficacy had the largest beta-values (β s = .31, .35, and .35, respectively).

5.4.4 IT-usage at work

Of the variables included in the analysis (see section 5.4), the variables that contributed to the highest extent to explaining the variance in *external electronic media usage* were:

- *Number of years of Internet usage*
- *Interest in traditional journalistic work*
- *General e-mail usage at work*
- *Work requires Internet usage*
- *IT/computer skill*

The maximum variance explained in the model was 41 percent (Table 7). The variables with the highest beta-values were number of years of Internet usage, interest in traditional journalistic work, and general e-mail usage at work. Partial correlation showed that when number of years of Internet usage was introduced in the estimation procedure, the effect increased by nearly 8 percent ($r = .28$), and the variable had the highest unique effect of approximately 5 percent ($r = .22$).

Table 7.

Summary of regression model after performing stepwise regression analysis with the dependent variable external electronic media usage and its explanatory variables (N=165).

Variables	B	β
Number of years of Internet usage	.43	.25*
Interest in traditional journalistic work	.34	.20*
General e-mail usage at work	.20	.20**
Work requires Internet usage	.58	.19**
IT/Computer skill	.31	.15**

$R^2_{\text{adjust}} = .41$. * $p \leq .01$., ** $p \leq .05$.

A regression analysis procedure was also performed with *internal electronic media usage* as the dependent variable. The independent variables accounted for 46 percent of the variance (Table 8). The variables with the highest beta-values were:

- General intranet usage at work
- Attitude towards IT as a communication tool
- IT/computer skill
- Work requires intranet usage.

General e-mail usage showed the largest incremental effect with a partial correlation of .40 (16 percent) and a unique effect of 9.6 percent. *General computer attitude showed a negative sign ($\beta = -.17$) on a low level of significance ($p < .10$), indicating that a pronounced negative computer attitude is related to higher frequencies of internal electronic media usage.* The correlation between general computer attitude and internal electronic media usage was negative but not significant. This could indicate a problem with multicollinearity since the variable might be affected by some other variable in the model. However, an analysis of the correlation matrix did not show any extensively high correlations between the independent variables (i.e. values over .90).

Analysis of Tolerance showed that collinearity did not explain more than 8 percent of the variance in general computer attitude (a level below .10 is recommended). Furthermore, the variance inflation factor (VIF) did not exceed 10. The two-part multicollinearity assessment was used, including a control of the condition index, which represents the collinearity of the combination of variables in the data set. The recommended threshold value of 30 was exceeded (33). In the next step, analyses of variables with variance proportions above 90

percent did not reveal two or more coefficients above the threshold level. Thus, collinearity was assumed not to be a problem with the variable general computer attitude, and therefore the variable was included in the further analysis.

Table 8.

Summary of regression model after performing stepwise regression analysis with the dependent variable internal electronic media usage and its explanatory variables (N=165).

Variables	B	β
General intranet usage at work	.22	.34*
Attitude towards IT as a communication tool	.29	.24*
IT/Computer skill	.37	.22*
Work requires intranet usage	.51	.19**
General computer attitude	-.38	-.17***
Interest in cooperation, contacts & individual development	.13	.16***
Interest in technological interview methods	.21	.12**
Work requires Internet usage	.30	.12**

$R^2_{\text{adjust.}} = .46$. * $p \leq .01$., ** $p \leq .05$, *** $p \leq .10$

In order to examine the relationship between *general IT-usage at work* and the variables in the conceptual research model, regression procedures were performed on each measure of IT-usage. The variables that accounted for most of the variance in the three models estimated (see tables 9-11) were:

- *Work requires Internet- and intranet usage*
- *Number of years of Internet-, intranet- and e-mail usage*
- *IT/computer skill*
- *Intranet self-efficacy*

These variables altogether explained approximately 20 percent of the variance in general IT-usage at work.

Table 9.

Summary of regression model after performing stepwise regression analysis with the dependent variable general intranet usage at work and its explanatory variables (N=165).

Variables

	<i>B</i>	<i>β</i>
Work requires intranet usage	.12	.28*
Number of years of intranet usage	.45	.19*
Number of years of e-mail usage at work	.36	.18**

$R^2_{adjust} = .21$. * $p < .01$, ** $p < .05$, *** $p < .10$.

Table 10.

Summary of regression model after performing stepwise regression analysis with the dependent variable general Internet usage at work and its explanatory variables (N=165).

Variables

	<i>B</i>	<i>β</i>
IT/Computer skill	.47	.26*
Work requires Internet usage	.62	.24*
Number of years of Internet usage	.26	.18**

$R^2_{adjust} = .23$. * $p < .01$, ** $p < .05$, *** $p < .10$.

Table 11.

Summary of regression model after performing stepwise regression analysis with the dependent variable general e-mail usage at work and its explanatory variables (N=165).

Variables

	<i>B</i>	<i>β</i>
Intranet self-efficacy	.15	.26*
Work requires Internet usage	.51	.22**
Number of years of Internet usage	.29	.22**

$R^2_{adjust} = .22$. * $p < .01$, ** $p < .05$, *** $p < .10$.

5.4.5 Usage of communication channels

A regression model was tested for *communication at work* (Table 12). Significant explanatory variables in the model were:

- *Attitude towards IT as a communication tool*
- *Attitude towards IT as a tool for cooperation*
- *Interest in traditional journalistic work*
- *General e-mail usage at work*
- *Computer self-efficacy*
- *IT/Computer skill*

These variables altogether explained 41 percent of the variance in communication at work. The analysis indicates that individuals with a manifest interest in traditional journalistic work tended to report higher levels of communication via various communication channels than individuals with less interest. Furthermore, a more pronounced negative attitude towards IT as a communication tool is related to a higher frequency of using various communication channels ($\beta = -.48$, $p \leq .01$), which is supported by a negative correlation ($r = -.45$, $p \leq .05$) between the two variables.

Table 12.

Summary of regression model after performing stepwise regression analysis with the dependent variable communication at work and its explanatory variables (N=165).

Variables	B	β
Attitude towards IT as a communication tool	-.30	-.42*
Attitude towards IT as a tool for cooperation	.16	.23*
Interest in traditional journalistic work	.16	.20*
General e-mail usage at work	.11	.19**
Computer self-efficacy	.05	.16**
IT/Computer skill	.15	.16**

$$R^2_{\text{adjust}} = .41. \quad *p \leq .01., \quad **p \leq .05, \quad ***p \leq .10$$

5.4.6 Perceptions of the effect of IT on communication

Next, a regression analysis was performed on the dependent variable *quantity of communication*, a dimension that aims to measure perceptions of the impact of IT on the quantity of communication (Table 13). The variables that showed significant beta-values in the model were:

- *Attitude towards IT as a communication tool*
- *Intranet self-efficacy*
- *General e-mail usage at work*
- *Interest in traditional journalistic work*

These four variables accounted for 28 percent of the variance explained regarding *quantity of communication*. Again, attitude towards IT as a communication tool showed a negative sign ($\beta = -.27$, $p \leq .01$), indicating that individuals with a more pronounced negative attitude perceived the effects (of IT) on quantity of communication at work as smaller than individuals with a positive attitude. Furthermore, intranet self-efficacy had the second largest coefficient ($\beta = .26$, $p < .01$) and showed an incremental effect of 7 percent when introduced in the model, as well as a unique effect of 5.7 percent.

Table 13.

Summary of regression model after performing stepwise regression analysis with the dependent variable quantity of communication and its explanatory variables (N=165).

Variables	B	β
Attitude towards IT as a communication tool	-.22	-.27*
Intranet self-efficacy	.10	.26*
General e-mail usage at work	.12	.19**
Interest in traditional journalistic work	.15	.17**

$R^2_{\text{adjust.}} = .28$. * $p \leq .01$, ** $p \leq .05$, *** p .

Communication effectiveness aims to measure to what extent the respondent perceives that IT has had an impact on the communication at work in terms of effectiveness. Regarding communication effectiveness, about 40 percent of the variance was explained in the model estimated by the following variables (Table 14):

- *Attitude towards IT as a communication tool*
- *Attitude towards IT as a tool for cooperation*
- *IT/Computer skill*
- *Interest in traditional journalistic work*
- *General e-mail usage at work*

As in earlier analyses, attitude towards IT as a communication tool had a negative beta-value ($\beta = .43$, $p < .01$), as well as a negative phi-coefficient in

the correlation analysis ($r = -.45$, $p \leq .05$). Both attitudes towards IT as a tool for cooperation and IT/computer skill are significant at the 1-% level.

Table 14.

Summary of regression model after performing stepwise regression analysis with the dependent variable communication effectiveness and its explanatory variables (N=165).

Variables	B	β
Attitude towards IT as a communication tool	-.33	-.43*
Attitude towards IT as a tool for cooperation	.21	.29*
IT/Computer skill	.25	.24*
Interest in traditional journalistic work	.16	.18**
General e-mail usage at work	.12**	.18**

$R^2_{adjust} = .40$. * $p < .01$, ** $p \leq .05$, *** $p \leq .10$.

5.4.7 A combined model with attitudes, self-efficacy, and interest as explanatory variables

Finally, regression analyses with the three dimension interests, self-efficacy, and attitudes as independent variables, and measures of *IT-usage at work* and *perceived effect of IT on communication* were performed. The reason for choosing these variables in the combined model was due to the fact that they accounted for a great deal of the variance in the models estimated. The combined model with self-efficacy, attitude, and interest variables as explanatory variables explained nearly 36 percent of the variance in *IT-usage* and in measures of *communication at work*.

5.4.8 Regression models on the perceptions of IT impact on communication

Significant variables in the model estimated with (effect of IT on) *communication effectiveness* as the dependent variable were:

- Attitude towards IT as a communication tool ($\beta = -.45$)
- Attitude towards IT as a tool for cooperation ($\beta = .27$)
- Computer self-efficacy ($\beta = .23$)
- Interest in traditional journalistic work ($\beta = .20$)
- General attitude towards e-mail usage at work ($\beta = .13$)

The variance explained in the model was 37 percent.

In a regression analysis of (the effect of IT on) *quantity of communication*, 25 percent of the variance was explained by:

- Intranet self-efficacy ($\beta = .32$)
- Attitude towards IT as a communication tool ($\beta = -.29$)
- Interest in traditional journalistic work ($\beta = .18$)

Again, attitude towards IT as a communication tool has a negative beta-value, indicating a negative connection with perception of effect of IT on the amount of communication at work. That is, the more negative attitude towards IT as a communication tool, the larger the perceived effect of IT on communication.

5.4.9 Regression models on usage of communication channels

When performing regression on *communication at work*, 36.4 percent variance was explained by:

- Attitude towards IT as a communication tool ($\beta = -.47$)
- Computer self-efficacy ($\beta = .30$)
- Interest in traditional journalistic work ($\beta = .21$)
- Attitude towards IT as a tool for cooperation ($\beta = .22$)

Worth noting is the beta-value of attitude towards IT as a communication tool. Again, the beta-value showed to be negative, implying a negative relationship between attitude and usage of communication channels, i.e. the more pronounced negative attitude of IT as a possible forum for communication, the more frequent usage of communication channels.

5.4.10 Regression models on IT-usage at work

A regression analysis was also conducted regarding the independent variable *internal electronic media usage* with the following significant variables:

- Attitude towards IT as a tool for cooperation ($\beta = .26$)
- General attitude towards Internet usage at work ($\beta = .22$)
- Interest in cooperation, contacts & individual development ($\beta = .21$)

These variables accounted for 19.5 percent of the variance in *internal electronic media*.

Regarding *external electronic media usage*, the variables that contributed to 28.3 percent of the variance were:

- General attitude towards e-mail usage at work

- Intranet self-efficacy, interest in traditional journalistic work, and
- Interest in cooperation, contacts, & individual development

The beta weights were .36, .20, .16, and .14, respectively.

Regarding general intranet-, Internet-, and e-mail usage, the variance explained ranged from 9 percent to 15.8 percent. Intranet self-efficacy, general attitudes towards e-mail- and intranet usage at work, and attitude towards IT as a tool for cooperation accounted for the variance in the models.

5.5 EXAMINING THE HYPOTHESES

5.5.1 Hypothesis 1: Specific self-efficacy, IT-usage and communication

It was suggested that specific self-efficacy would be positively correlated to the dependent variables (measures of IT-usage at work and communication). The result shows that computer self-efficacy was significantly and positively correlated to all measures of IT-usage at work, except for general intranet usage. Pearson coefficients ranged from .15 to .36. Intranet self-efficacy was positively correlated with perceptions of the IT effect on communication, communication at work, external media usage, and general e-mail- and Internet usage at work. Furthermore, Internet self-efficacy showed positive relationships with all IT-related work variables with the exception of general intranet usage and internal electronic media usage. To sum up, the correlation analyses confirm the hypothesis of positive relationships between specific measures of efficacy beliefs and IT-related work measures.

5.5.2 Hypothesis 2: Specific self-efficacy versus general self-efficacy

It was proposed that the specific measures of self-efficacy would explain more of the variance in measures of IT-usage and communication at work than general work self-efficacy. The hypothesis is supported: in certain regression models, either computer self-efficacy, intranet self-efficacy, or Internet self-efficacy were significant explanatory variables in the models of IT-usage or communication at work. The beta-values of specific measures of self-efficacy ranged from .16 to .35 in the models estimated. In turn, general self-efficacy did not contribute as an explanatory variable in any of the estimated models.

5.5.3 Hypothesis 3: Gender differences in self-efficacy

It was presumed that there would be significant gender differences in self-efficacy (measures of specific self-efficacy) in favor of men. The results show gender differences in the different measures of specific self-efficacy, and therefore the hypothesis is supported. Men scored significantly higher in

intranet efficacy beliefs (t-tests, $M_s = 0.149$ and -0.222 , respectively, $p < .05$) and they also scored significantly higher than women on the Computer self-efficacy scale (t-tests, $M_s = 0.126$ and -0.119 , $p < .05$). The t-test of the measure of Internet self-efficacy did not reach significant levels. In summary, in two out of the three models of self-efficacy, men scored higher than women did.

5.5.4 Hypothesis 4: Low versus high efficacy beliefs

It was suggested that there would be significant differences between the two groups that scored low and high, respectively, in self-efficacy beliefs (computer self-efficacy, Internet self-efficacy, and intranet self-efficacy) on the dependent variables in the conceptual research model. T-tests of mean differences support this hypothesis.

5.5.4.1 Computer self-efficacy

In addition, differences between low and high scorers in computer efficacy beliefs were found regarding background variables, independent variables and dependent variables, in favor of *high scorers*:

- Perceptions of the effect of IT on quantity of communication ($M_s = 0.032$ and -0.728 , respectively, $p < .05$).
- General attitude towards Internet usage at work ($M_s = 0.036$ and -0.822 , $p < .05$).
- General attitude towards e-mail usage at work ($M_s = 0.039$ and -0.872 , $p < .05$).
- General e-mail usage at work ($M_s = 0.029$ and -0.655 , $p < .01$).

Furthermore, low and high scorers also differed in terms of some background variables: IT/computer experience ($M_s = 0.052$ and -1.170 , $p < .01$) and IT/computer skill ($M_s = 0.055$ and -1.251 , $p < .01$). Regarding attitude towards IT as a communication tool, individuals who scored low on computer efficacy beliefs held a more positive attitude in comparison with the Ss who scored high ($M_s = 0.783$ and -0.032 , $p < .05$).

5.5.4.2 Intranet self-efficacy

Analyses of group differences in terms of background variables, independent variables and dependent variables, showed significant distinctions in favor of the group *high scorers* on intranet self-efficacy concerning the variables:

- General attitude towards e-mail usage at work ($M_s = 0.073$ and -0.675 , $p < .05$).

- General attitude towards Internet usage at work ($M_s = 0.091$ and -0.844 , $p < .01$).
- General e-mail usage at work ($M_s = 0.058$ and -0.532 , $p < .05$).

In addition, analyses of group differences further showed significant distinctions in favor of the group *high scorers* in terms of the background variable IT/computer skill ($M_s = 0.113$ and -1.056 , $p < .001$). A finding of an opposing group difference was revealed. The measures of attitudes indicated significant group differences regarding attitude towards IT as a communication tool in favor of the group that held low intranet efficacy beliefs ($M_s = 0.865$ and -0.093 , $p < .001$).

5.5.4.3 Internet self-efficacy

Regarding Internet self-efficacy, the analyses also showed some group differences. The group that scored high in Internet self-efficacy uses some applications of information technologies to a greater extent than the group that scores low, more specifically regarding:

- General e-mail usage at work ($M_s = 0.025$ and -1.355 , $p < .05$).
- General intranet usage at work ($M_s = 0.021$ and -0.985 , $p < .01$).

Hypothesis four is therefore confirmed by the findings of group differences, since it was suggested that there would be significant differences between the two groups that scored low and high in self-efficacy beliefs (computer self-efficacy, Internet self-efficacy, and intranet self-efficacy) regarding the variables in the present study.

5.5.4.4. Group differences

An analysis of gender differences was also performed. The results from the t-tests of group differences showed that men were significantly more confident regarding their Internet capability than women in terms of:

- Internet self-efficacy ($M_s = 0.141$ and -0.228 , respectively, $p < .03$) and regarding their
- Computer self-efficacy ($M_s = 0.126$ and -0.190 , respectively, $p < .05$), and
- General work self-efficacy ($M_s = 0.165$ and -0.234 , respectively, $p < .02$).

The t-tests also revealed significant gender differences, but in favor of women, in terms of interest in traditional journalistic work ($M_s = -0.121$ and 0.187 , respectively, $p = .06$).

5.6 SUMMARY OF MAIN FINDINGS

5.6.1 Perceptions of effects of IT on communication at work

The findings pointed out the variables that to the highest extent contributed to explaining the variance in how IT is perceived to affect quantity of communication at work. These variables were: attitude towards IT as a communication tool, intranet self-efficacy, general e-mail usage at work, and interest in traditional journalistic work ($R^2 = .28$). The same attitude-, interest-, and self-efficacy variables accounted for 25 percent explained variance in a second model estimated. Both analyses indicate that the more negative attitude towards IT as a communication tool, the larger impact IT is perceived to have on the quantity of communication.

A separate analysis of the self-efficacy variables showed that intranet self-efficacy as the only significant contributing factor accounted for 13.7 percent of the variance explained ($\beta = .38$). Furthermore, separate regression analyses of attitudes and self-efficacy showed that these factors contributed to the variation in how communication channels are used by journalists in the sample.

5.6.2 Usage of communication channels at work

The results indicate that some of the variables in the conceptual research model significantly contributed to explaining the variance in how communication channels are used among news journalists. According to the analysis, the variation in *external electronic media usage* was explained by several variables. Experience of Internet usage (measured in number of years), degree of interest in traditional journalistic work, frequency of e-mail usage at work, degree of IT/computer skill, and whether Internet usage is required for the performance of work tasks ($R^2 = .41$) were significant explanatory variables in the model. In the combined model with self-efficacy, interest, and attitudes as explanatory variables, a somewhat different finding was revealed. General attitude towards e-mail usage at work, intranet self-efficacy, interest in traditional journalistic work, and interest in cooperation, contacts & individual development accounted for approximately 28 percent of the variance.

In the analysis of *internal electronic media usage*, several significant explanatory variables were unveiled. Frequency of intranet usage, attitude towards IT as a communication tool, IT/computer skill, general computer attitude, interest in cooperation, contacts & individual development, interest in technological interview methods, and work requires Internet usage, were the variables that accounted for 46 percent of the variation in how internal electronic media were used by journalists in the sample. General computer

attitude was negatively related to usage, while attitude towards IT as a communication tool was positively related to internal media usage.

In the combined model with self-efficacy, interest, and attitudes as independent variables, attitude towards IT as a tool for cooperation, general attitude towards Internet usage at work, and interest in cooperation, contacts & individual development accounted for nearly 20 percent of the variance in *internal media usage*.

In the distribution and receiving of information (measured as *communication at work*) the variables attitudes towards IT as a communication and cooperation tool, interest in traditional journalistic work, general e-mail usage, computer efficacy beliefs, and IT/computer skill were significantly contributing variables. As much as 41 percent of the variance could be accounted for by these variables. In the model estimated with the self-efficacy-, interest-, and attitude variables, the same factors, except for skill and e-mail usage accounted for more than 36 percent of the variance. Moreover, in a separate analysis with self-efficacy variables, computer- and intranet self-efficacy, explained 14 percent of the variation in usage of communication channels.

5.6.3 IT-usage at work

Regression estimations with measures of general IT-usage at work as dependent variables revealed that explanatory variables were experience of IT-usage (measured in years), IT/computer skill, work demands intranet/Internet usage, and intranet self-efficacy. The maximum variance explained was 23 percent. In a separate analysis with self-efficacy measures as independent variables, computer-, intranet-, and Internet self-efficacy explained maximum 11.8 percent of IT-usage at work. Furthermore, a separate analysis was conducted with self-efficacy, attitudes, and interest factors as explanatory variables of IT-usage. Intranet self-efficacy, general attitude towards e-mail and intranet usage at work, and attitude towards IT as a tool for cooperation accounted for the variance explained (maximum R^2 was nearly .16).

5.6.4 Attitudes

A contrasting result was revealed with regards to the attitude-usage link, since individuals with a negative general computer attitude appeared to report more frequent internal media usage than individuals with a positive attitude. The same finding emerged in the analysis of general communication usage at work. Attitude towards IT as a communication tool had a negative beta-value, implying that the more negative attitude, the more frequent use of various communication channels at work. T-tests showed that the Ss who scored low on

self-efficacy seemed to hold a more positive attitude towards IT as a communication tool in comparison with the Ss who scored higher on efficacy beliefs. Furthermore, attitude towards IT as a communication tool had a negative sign in the regression analyses of impact of IT on communication at work, indicating that those individuals with a negative attitude perceived the effects of IT on communication as larger than individuals with a more positive attitude. A plausible interpretation is that IT makes it possible to reduce time costs and to communicate with others in a rather convenient and time-reducing manner. Individuals with a negative attitude towards computer- and IT-tools may still use information technologies because of limitations of time. Journalism is an individualistic profession and IT-usage may strengthen the independent role of the journalist, due to the opportunities of electronic communication instead of face-to-face meetings.

The impact of the practical benefits of IT, which enable journalists to have *external* communication and get information access, might be perceived quite differently. Because of the opportunities in practice to get information without meeting every informant face-to-face or by telephone, the positive effects of IT might be more obvious in terms of information access and communication with people outside the news office.

Another implication is that some journalistic work tasks obviously require IT-usage, which can be an alternative explanation for the unexpected negative relationship between attitudes and usage. The correctional analysis revealed negative connections between requirement of Internet usage at work and attitudes towards IT. That is, those journalists who perceived Internet usage to be required at work also held a more constrained attitude towards IT-usage at work. Therefore, it is plausible to assume that even if one has a negative attitude towards IT and sees the constraints with IT-usage, the practical work requires frequent IT-usage in order to accomplish one's work tasks. Individuals with a more positive attitude, on the other hand, might be those with a little less experience, who still expect a lot in terms of benefits from the technologies.

The attitude- and interest variables were more evident as explanatory variables than the self-efficacy variables. Both the attitude and the interest factors turned out to be the most important explanatory variables of nearly all the dependent variables. This is in line with the research by Truedsson and Sjöberg (2000), who found the same factors important in explaining attitudes to information technology usage. When comparing the beta-values of the independent variables, it turned out that attitude towards IT as a communication tool had the highest values of the attitude variables in several of the estimated models. When comparing general computer attitude with measures of specific IT attitudes, the beta-values of the specific attitude variables were mostly higher for the specific

attitude variables than for the general attitude variables. This supports the psychometric and explanatory value of the specific attitude constructs.

5.6.5 Self-efficacy and IT-related work

As the correlation analyses showed, measures of specific self-efficacy were correlates of communication at work and perceptions of impact of IT on communication. Likewise, all measures of specific efficacy beliefs showed medium correlations with the measures of IT- and communication usage at work, except for general intranet usage and internal media usage. This support the link between confidence in computer- and IT-related tasks and degree of usage of various technology communication channels found in other empirical studies (see chapter 2). As was assumed, general work self-efficacy although weakly correlated with measures of communication and also with general intranet usage, was not a significant explanatory factor in any of the regression analyses. On the contrary, computer-, intranet-, and Internet self-efficacy explained a part of the variance of measures of IT-usage and communication at work.

The results give some support for the argument that efficacy beliefs might have an impact on how IT is used at work. However, what the analyses indicate more concretely is that self-efficacy is related to computer- and IT-related work tasks. As was shown, individuals with high IT- and computer self-efficacy use e-mail and the intranet more frequently at work than individuals with lower levels of self-efficacy beliefs. Furthermore, experience of IT-usage, measured in years, was related to higher self-efficacy beliefs, according to the correctional analysis. In general, the findings indicate that individuals with high self-efficacy beliefs have a more positive general attitude towards IT-usage at work, have longer experience of IT-usage at work, and judge the impact of IT on communication as more pronounced than individuals with low self-efficacy beliefs.

5.6.6 Interest

A certain finding indicates that individuals with a marked interest in traditional journalistic work use IT and communication channels more frequently than individuals with less interest in conventional journalistic work. Moreover, to some degree, individuals with a high interest in the collaborative aspects of journalistic work and in technological interview methods tend to do the same. The same interest factors seem to be related to how IT is perceived to impact the communication at work. That is, the more pronounced interest in traditional journalistic work, the more pronounced perception of impact of IT on communication effectiveness and quantity at work. These findings are quite

logical since news journalism mainly deals with communication and with search and delivery of information. It is reasonable to assume that information technologies have had a large impact on news journalists' work procedures, communication patterns, and maybe most importantly, on the access to information.

5.6.7 Gender differences

The descriptive result showed that men in the sample were using Internet and e-mail significantly more frequently than women did. Men also held a more positive general attitude towards computers. Moreover, the analyses showed that men had longer general IT/computer experience and more computer education than women had. These findings verify earlier research on gender differences in IT -usage, computer usage, and computer attitudes (see chapter 2).

The result from tests of group differences indicates that among journalists, men are significantly more confident regarding their Internet and computer capabilities than women. T-tests also revealed significant gender differences, but in favor of women, in terms of interest in traditional journalistic work. This indicates that women appear to be more interested in typical journalistic work tasks than men in the sample.

The results of the t-tests indicate that there are differences in perceived technology capability between men and women, in terms of Internet self-efficacy, which confirms earlier research on gender differences in computer-related behavior and self-efficacy (see chapter 2). However, the present study had the aim to investigate more specific measures of technology self-efficacy, which has been done scantily before. Gender differences revealed in earlier human-computer studies, were in this study also found to exist in more specific IT-usage at work.

5.6.8 IT-related work among journalists

According to U.S. surveys (Middleberg/Ross 2000; 2001), American journalists are using Internet more than ever, and because of rapid changes, the typical newsroom has far more Internet connections than phone lines. Despite the rapid acceleration of IT development in recent years, it still appears that journalists are unsure that they have enough training to work with new technical tools or that journalism schools offer adequate technical preparation, according to the American survey. The U.S. data indicate that the lack of training in and negative attitudes towards information technologies might pose a serious problem. However, the findings from the present study show that IT/computer skill and experience of IT-usage were positively related to Swedish journalists' usage of

IT- and communication channels at work. Furthermore, the present result indicates that the degree of self-efficacy can play a role in how information technologies and other communication channels are used among journalists. Earlier studies have shown that low self-efficacy levels among trainees can form a barrier to training. Training in self-management skills, in turn, can improve job performance (Frayne & Geringer, see p. 41). Since journalists are required to integrate information technology at work, the degree of self-efficacy might affect *how* the technologies are used. More evidently, attitudes towards IT and computers, and interest in traditional journalistic work, seem to be linked to how IT and other communication channels are used at work among journalists.

The present findings suggest that IT as a work tool is dependent of the task at hand, e.g. it is important to distinguish between different purposes with IT-usage at work. The purposes might be several: to use IT as support for collaborative work, IT as a general work tool and IT as a data base with information. More importantly, attitudes towards IT-usage as well as actual usage probably differ among different occupations. As the current results show, attitude towards IT and general computer usage depended on the different types of usage among journalists (see Tables 6-14). The occupation-specific issue regarding IT-usage at work will be discussed further in the General discussion in chapter 8.

In Sweden, information technology usage is nowadays a natural part of journalistic information acquisition. It is argued that journalists in the future will have access to enormous quantities of information through public electronic databases, archives, and political correspondence. If this prognosis is correct, knowledge of the driving mechanisms of individual IT-skills and capabilities will be even more important in the future.

6. STUDY 3. CAN IT SUPPORT CREATIVITY?

6.1 INTRODUCTION

The main purpose of study 3 connects to the second objective of the thesis, to examine the *relationship between IT-usage at work and creativity among Swedish newspaper journalists*.

Specifically, the aim was to investigate the relationship between information technology usage, psychological variables and perceived creativity, and to determine to what degree these factors altogether could explain perceived creativity at work among journalists.

The study also examines *in what ways Internet, e-mail, and intranets can support or hinder creative accomplishment at work*.

6.1.1 Participants

One hundred and sixty-five Swedish journalists at nine newspaper offices responded to a questionnaire. The total response rate was 49.4 percent (165 out of 334). Approximately 34 percent were between 41 and 50 years old. The mean age was 40 years. Approximately 38 percent of the respondents were female and about 61 percent of the sample had higher education. Mean years in occupation were 18.5 years.

6.1.2 Procedure

Study 3 including data collecting was carried out on the same occasion as Study 2 and with the same sample of respondents. During spring 2000 to autumn 2000 a mail survey in form of a questionnaire was distributed to newspaper journalists. Contacts were made with personnel departments or managers at each newspaper office. The respondents were sampled from both local daily newspapers and national daily newspapers publishing both on-line and as traditional newspapers. Instructions were sent with the questionnaire, together with an envelope ensuring anonymity. Large efforts were made in order to obtain as many answers as possible. A reminder was sent on two occasions, one by mail and one by e-mail. Personal telephone contact was also taken during the autumn with those who still had not answered the questionnaire. This work increased the response rate from approximately 20 percent to nearly 50 percent.

6.1.3 Questionnaire and scales

The variables were selected on the basis of earlier research of creativity and self-efficacy as well as on the results obtained from Study 1 and Study 2 in the thesis. As a consequence of the first two studies conducted, some of the variables used in Study 2 as dependent variables are used as independent variables in the present study. The questionnaire included 19 scales and background questions. The items were to be rated in Likert-type scales. Some of the scales were either developed by the author for the present study or adapted from previous research. The scales were developed and based on the results from the interview study (Study 1). Most of the scales were used also in Study 2 and are described in Appendix B. The new Study 3 scales are briefly described below.

Figure 7 illustrates which variables were used from the original conceptual research model. It should be noted that some of the variables that were dependent variables are labeled as independent in the present study and vice versa.

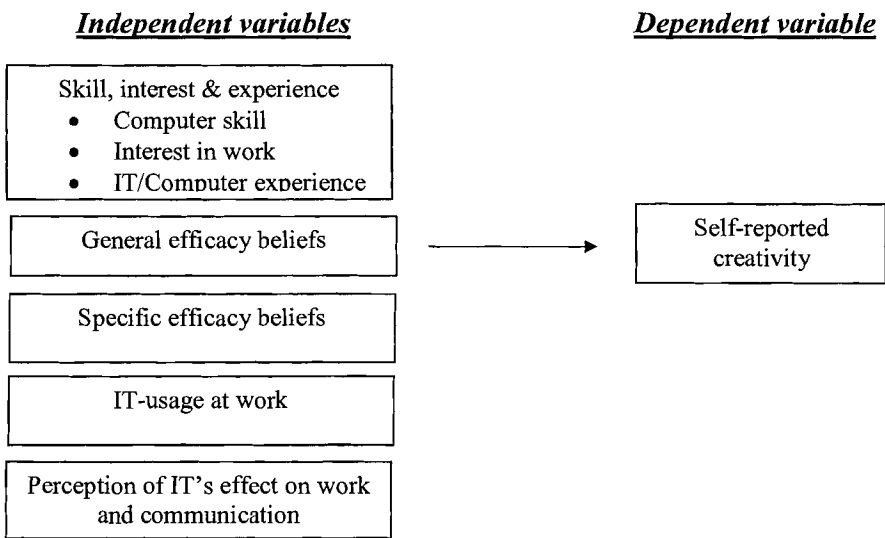


Figure 7. The conceptual framework of the hypothesized interrelated variables in Study 3.

Some of the scales and items that were included were also used in Study 2 (all of them are independent variables in the current study). Other scales and items were not used in Study 2 but chosen especially for Study 3.

Interest, skill and experience

- *Interest in work* (independent variable in Study 2).
- *IT/Computer experience* (independent variable in Study 2).
- *IT/Computer skill* (independent variable in Study 2).

General efficacy beliefs

- *General work self-efficacy* (independent variable in Study 2).

Specific efficacy beliefs

- *Creative efficacy (independent variable)*. The scale is based on the work by Bandura (1977) and was developed by Tierny (1997). The items reflect efficacy perceptions related specifically to being creative in one's work. The scale was not used in Study 2 since it aims to measure efficacy beliefs in terms of one's creative potential in specific.
- *Computer self-efficacy* (independent variable in Study 2).
- *Intranet self-efficacy* (independent variable in Study 2).
- *Internet self-efficacy* (independent variable in Study 2).

IT-usage at work

- *Number of years of Internet usage, intranet usage, and e-mail usage at work* (Dependent variables in Study 2).
- General IT-usage at work* (dependent variable in Study 2).

Perception of IT's effect on work and communication

- *Solving challenging work problems* (independent variable).
- *IT-communication work outcome* (dependent variable in study 2).

Self-reported creativity

- *Perceived creativity* (dependent variable).

The criteria used when choosing scales and items were that the measure instrument should have 1) been validated in earlier research or 2) been suggested in the literature by authorities in the field.

The variables included in the analysis in the initial phase were:

- *Measures of IT-usage at work* (i.e. number of years of Internet-, intranet-, and e-mail usage, present intranet-, e-mail-, and Internet usage at work)
- *General work self-efficacy*
- *Computer self-efficacy*
- *Intranet self-efficacy*
- *Internet self-efficacy*
- *Creative efficacy*

- *Interest in work* (i.e. interest in traditional journalistic work, interest in cooperation, contacts & individual development, and interest in technological interview methods)
- *IT/computer experience*
- *Solving challenging problems by support from IT- and communication tools*
- *IT/computer skill*
- *IT Communication work outcome*

6.2 INDICES

Principal component factor analyses with oblique (Oblimin) rotation were used for the creativity and interest scales in order to reduce the number of variables and to make the variables more meaningful and conceptualized.

Perceived creativity. A factor analysis with a two-factor solution was performed. A *KMO* measure (.671) and *Bartlett's Test of Sphericity* ($p = .000$) showed that the data were suitable for factor analysis (see p. 64). Factor loadings under .40 were not included in the analyses. Two items were not included in the final scale due to a wrong sign in the item-total correlation. Table 15 shows the two-factor solution with factor loadings. The variance explained was 40.9 percent. The two factors were interpreted as (1) spontaneous creativity and (2) creativity inhibition.

Table 15.
Two-factor analysis of the creativity scale.

Variable	Factor loading	
	Spontaneous creativity	Creativity inhibition
The people around me regard me as very creative	.68	
I often find a key to problem-solving in the most unexpected places	.66	
It happens that I come up with the solution to tasks in my spare time	.66	
It is not hard work but inspiration which is important in my job	.59	
Intuition is (what is) important in my job	.55	
My tasks constantly demand new ideas and plans	.54	
My boss appreciates unconventional solutions of problems	.47	
Using Internet has helped me come up with new ideas and plans at work	.46	
My tasks are best solved with known routines		.66
I like working with many and varying tasks		-.56
I find completely new kinds of tasks exciting		-.53
When you get a problem it is best to let it ripen for a while before you deal with it		.49
What is important in problem-solving is that you can absolutely not make any mistakes		.41

Interest in work. The items were examined by means of a principal component analysis with oblique rotation. The *KMO* measure (.795) and *Bartlett's Test of Sphericity* ($p = .000$) showed that the data were acceptable for factor analysis. Factor loadings under .40 were not included in the analyses. Table 16 shows the three-factor solution with factor loadings. The variance explained was 47.9 percent. The three dimensions from the factor analyses were interpreted as 1) Interest in traditional journalistic work, 2) Interest in cooperation, contacts & individual development, and 3) Interest in technological interview methods.

Table 16.

Three-factor analysis of Interest of work scale.

Variable	1 Interest in traditional journalistic work	2 Interest in cooperation, contacts & individual development	3 Interest in techno- logical interview methods
Research	0.80		
Writing articles	0.76		
To perform interviews via telephone	0.76		
To perform interviews face to face	0.75		
To have contacts with the readers	0.69		
To inform the public	0.59		
To solve tasks independently	0.56		
Cooperation with others in my work group		0.73	
Cooperation with others outside the news office		0.67	
Problem-solving in group		0.63	
Own further education		0.60	
New computer systems or other new technology		0.59	
A high income		0.56	
Management		0.47	
International contacts and cooperation		0.41	
To perform interviews via fax			0.87
To perform interviews via e-mail			0.81

6.3 DESCRIPTIVE RESULT

First, descriptive data of the variables in the study were examined. In Table 17, descriptive statistics including mean, standard deviation, and reliability of index are reported. The plurality of the indices held a sufficient reliability value (α) over .70. However, the indicia external conditions for creativity had a low alpha of .30, and a low alpha may indicate a low magnitude of internal consistency of the scale. Alpha may be high by conventional standards (greater than .70), in spite of low average item intercorrelations or multidimensionality, because alpha is affected by the number of items. What is important to know is that alpha does not increase as a function of item intercorrelation, nor does it decrease as a function of multidimensionality. Even though alpha gives valuable information about the communalities of items, it still does not say anything about stability across time. Instead, the precision of alpha offers more accurate information about dimensionality than the size of alpha.

Table 17.
Descriptive statistics and reliability of indices (Study 3)

Variables/indices	<i>M</i>	<i>SD</i>	Cronbach alpha (α)
Spontaneous creativity	3.68	.53	.65
Present intranet usage	2.85	1.76	N/A ^a
Present Internet usage	4.24	1.19	N/A ^a
Present e-mail usage	4.14	1.08	N/A ^a
Number of years of e-mail usage	2.42	.85	N/A ^a
Number of years of intranet usage	1.90	.74	N/A ^a
Number of years of Internet usage	2.52	.82	N/A ^a
General work self-efficacy	3.11	.44	.89
Computer self-efficacy	5.68	2.02	.93
Intranet self-efficacy	5.00	1.84	.89
Internet self-efficacy	7.17	2.24	.91
IT/Computer experience	1.34	.54	.82
Communication effectiveness	.92	.69	.87
Quantity of communication	1.26	.72	.86
Interest of traditional journalistic work	4.58	.80	.82
Interest of cooperation, contacts & individual development	3.82	.85	.74
Interest of techn. interview methods	1.29	1.04	.79
Solving challenging work problems	2.95	.60	.76
Creative inhibition	2.51	.50	.30
Creative efficacy	4.82	.76	.82

^a Alpha cannot be assessed for single-item.

6.4 RELATIONSHIPS BETWEEN VARIABLES

A first step to examine this question is to analyze possible relationships between psychological factors, IT-usage, and perceived creativity. The correlation analysis revealed that general work self-efficacy was positively related to spontaneous creativity ($r = .28, p < .01$) (see Table 18). Furthermore, there was a positive relationship between creative efficacy and perceptions of IT effects on the communication patterns at work (i.e. quantity of communication, $r = .22, p < .01$). Creative efficacy did not show a statistically significant relationship with any of the other measures of IT-usage at work but was positively correlated to solving challenging work problems ($r = .21, p < .01$).

The analyses further showed a negative relationship between interest in traditional journalistic work and creativity inhibition ($r = -.16, p < .05$) and a positive correlation between interest in cooperation, contacts & individual development and spontaneous creativity ($r = .31, p < .01$).

Experience of IT-usage, measured as number of years, was positively correlated to perceived creativity, through the relationship between number of years of e-mail usage and spontaneous creativity ($r = .30, p < .01$), as well as between number of years of Internet usage and spontaneous creativity ($r = .19, p < .05$). The measures of present IT-usage were not significantly related to spontaneous creativity.

6.5 GROUP COMPARISONS

Due to the finding of a relationship between experience of IT-usage and spontaneous creativity, group comparisons of low and high scorers on creativity were performed. T-tests revealed some significant differences in favor of the group that scored *high* on perceived creativity regarding the following measures of usage (higher mean values are presented first):

- Internal media usage ($M_s = 0.187$ and -0.384 , respectively, $p < .05$).
- Present intranet usage ($M_s = 0.244$ and 0.080 , respectively, $p < .001$).
- Present e-mail usage ($M_s = 0.300$ and -0.129 , respectively, $p < .05$).
- Communication at work ($M_s = 0.396$ and -0.172 , respectively, $p < .001$).

As a contrast, the group that scored *low* on spontaneous creativity showed significantly higher levels of:

- Education ($M_s = 0.602$ and 0.105 , respectively, $p < .05$).
- IT/Computer education ($M_s = -0.056$ and -0.202 , respectively, $p < .05$).

No significant gender differences in perceived spontaneous creativity were found.

6.6 MULTIPLE REGRESSION ANALYSES

In order to investigate the paths between the measures of IT-related work variables and creativity, simultaneous multiple regression analyses were performed. Originally the variables included in the analysis were: *measures of IT-usage at work* (i.e. number of years of Internet-, intranet- and e-mail usage, present intranet-, e-mail- and Internet usage at work), *general work self-efficacy*, *computer self-efficacy*, *intranet self-efficacy*, *Internet self-efficacy*, *creative efficacy*, *interest in work* (i.e. interest in traditional journalistic work, interest in cooperation, contacts & individual development, and interest in technological interview methods), *IT/computer experience*, *solving challenging problems by support from IT- and communication tools*, and *IT/computer skill*.

As in Study 2, the explanatory variables were revealed after performing a stepwise elimination procedure. Other stepwise procedures were performed and very similar results were acquired. Spontaneous creativity was explained to 22.8 percent by a collection of explanatory variables. The variables that accounted for the significant beta values were: solving challenging problems, general work self-efficacy, number of years of e-mail usage, and interest in cooperation, contacts and individual development. The result from the regression analysis is reported in Table 19.

Table 19.

Summary of regression model obtained after performing a stepwise regression analysis with spontaneous creativity at work as the dependent variable (N=165).

Explanatory variables	<i>b</i>	<i>β</i>
Solving challenging problems	.19	.21*
Interest in cooperation, contacts & individual development	.11	.17**
General work self-efficacy	.24	.20**
Number of years of e-mail usage at work	.12	.20**

$R^2_{adj} = .228$. * $p \leq .01$., ** $p \leq .05$

6.6.1 Self-efficacy and creativity

A separate regression analysis of general work self-efficacy, computer self-efficacy, intranet self-efficacy, creative efficacy, and Internet self-efficacy on spontaneous creativity was performed. Creative efficacy and general work self-efficacy were the only significant explanatory variables in the model ($\beta_s = .20$

and .17, respectively). These two variables accounted for approximately 9.8 percent of the variance in spontaneous creativity (Table 20).

Table 20.
Summary of regression model obtained after performing a stepwise regression analysis with spontaneous creativity at work as the dependent variable and self-efficacy measures as explanatory variables (N=165).

Explanatory variables	<i>b</i>	<i>β</i>
Creative efficacy	.14	.20**
General work self-efficacy	.21	.17**

$R^2_{adj} = .098$. * $p \leq .01$. ** $p \leq .05$.

6.6.2 IT-usage and creativity

A regression analysis with the independent variables number of years of e-mail usage at work, number of years of intranet usage at work, number of years of Internet usage at work, present Internet usage at work, present intranet usage at work, and present e-mail usage at work was obtained on the dependent variable spontaneous creativity. Number of years of e-mail usage as the only significant variable in the model explained 7.7 percent of the variance in spontaneous creativity ($\beta = .28$, $p = .00$) (see Table 21).

Table 21.
Summary of regression model obtained after performing a stepwise regression analysis with spontaneous creativity at work as the dependent variable and measures of IT-usage at work as explanatory variables (N=165).

Explanatory variables	<i>b</i>	<i>β</i>
Number of years of e-mail usage	.26	.38**

$R^2_{adj} = .077$. ** $p < .01$.

6.7 DISCUSSION

6.7.1 Efficacy beliefs and creativity

The correlation analysis showed that general work self-efficacy was positively related to perceived spontaneous creativity. A parallel can be drawn to self-confidence. Self-confidence is assumed to be an important characteristic of the creative personality, which might indicate that a certain degree of efficacy belief in capability could also be essential for creative performance. Moreover, Bandura (see chapter 2) argues that a person with high self-efficacy beliefs is more persevering in ambivalent situations. Certain phases during idea-generation and changes in work conditions can be perceived as ambivalent and demanding, and therefore a certain level of efficacy beliefs might function as a buffer.

Creative efficacy was positively correlated to solving challenging work problems through support of IT and other communication channels. This finding implies that the higher level of creative capability of a person, the more frequently the person uses IT and communication channels for problem-solving purposes.

In a separate analysis, the self-efficacy variables, i.e. creative efficacy and general work self-efficacy, accounted for about 10 percent of the variance in creativity. As the result indicates, individuals with higher levels of general work self-efficacy hold higher levels of perceived creativity. The IT- and computer specific self-efficacy variables were not significant in the analyses. This might seem as rather contra-intuitive since general work self-efficacy was connected to higher levels of perceived creativity. However, general work self-efficacy and computer self-efficacy are different constructs and are assumed to measure different domains of self-efficacy. Even if a certain degree of self-efficacy in general work tasks is related to creativity at work, the relationship between computer self-efficacy and creativity is not necessarily the same.

6.7.2 Experience, IT-usage, interest and creativity

The analyses also revealed a positive correlation between interest in cooperation, contacts & individual development and spontaneous creativity ($r = .31$, $p < .01$). This finding supports the assumption that interest (i.e. intrinsic motivation) is important for creative performance (See chapter 2).

Moreover, experience of IT-usage was positively correlated to perceived creativity, through the relationship between number of years of e-mail usage/number of years of Internet usage, and spontaneous creativity. This

indicates that the longer the experiences of e-mail usage at work, the higher the level of perceived creativity. A possible interpretation is that a high frequency of e-mail correspondence can influence the time available for reflection and idea-generation positively. IT-usage might also generate information amounts that are useful for creative ideas. Due to the finding of a relationship between experience of IT-usage and spontaneous creativity, group comparisons of low and high scorers on spontaneous creativity were performed. The finding of significant differences in favor of the group that scored *high* on perceived creativity regarding IT and communication usage, together with the positive relationship between number of years of IT-usage and creativity, imply that there exists a connection between IT-usage and perceived creativity at work. As a contrast, the group that scored *low* on spontaneous creativity showed significantly higher levels of education and IT/computer education.

6.7.3 Exploring perceived creativity

Spontaneous creativity was explained to nearly 23 percent by a collection of variables. The variables that accounted for the significant beta values were: solving challenging problems through the support of IT and communication, general work self-efficacy, number of years of e-mail usage, and interest in cooperation, contacts & individual development. In sum, the results indicate that both generalized efficacy beliefs at work and IT-usage at work are related to perceived creativity among the journalists in the sample. Furthermore, the most important explanatory variable in the collection of variables was solving challenging work problems. The finding implies that individuals who use IT and other communication channels frequently for problem-solving purposes, also perceive themselves as more creative than individuals with less frequent IT-usage.

6.7.4 IT-usage and creativity

IT-usage at work, measured as number of years of e-mail usage, explained part of the variance in creativity. This suggests that the more extensive the e-mail usage the higher the perceived creativity level. Employees who use IT extensively are more specific in their usage. Usage of various and diverse applications in a more sophisticated way might nurture creativity since the information access and availability increase. As an example of how perception of the effectiveness of IT-usage influences usage, Chang and Cheung (2000) found that perceptions of near-term consequences of Internet- and WWW-usage (i.e. that the usage can increase the quality and effectiveness of job performance) affect the intention to use Internet. In the present study, number of years of e-mail usage explained nearly 9 percent of the variance in creativity, which

suggests that e-mail usage might be regarded as a possible factor of relevance for creativity.

6.8 CONCLUSION

In sum, the findings suggest that there is a relationship between levels of work self-efficacy and the tendency among the journalists to use information technology and communication tools when solving work problems. Furthermore, the findings imply that individuals with high creative self-efficacy use the technology to solve problems at work to a higher degree than individuals who report low creative confidence. An interpretation might be that the levels of self-efficacy are related to the purposes with the usage. In this case it seems like higher self-efficacy is related to sophisticated IT-usage for problem-solving purposes. However, the present study does not examine *the direction* of the relationship between self-efficacy and IT-usage. Self-efficacy might be a factor that enhances the usage, but it is as likely that the frequency of usage also affects the level of efficacy beliefs. As Bandura claims, self-efficacy is dependent on environmental stimuli. There is a continuous interaction between the individual and her environment which shapes and re-shapes both efficacy beliefs and behaviors.

The results strengthen the role that the level of perceived creativity can have for work situations. Earlier research shows that interest in various work tasks influences work motivation, measured as willingness to work (Björklund, 2001). However, the connection between interest in this extrovert form and creativity might be a little more difficult to interpret, because the conventional view of the innovative individual is the one of a reclusive person.

A different pattern of results emerged from the negative connection between interest in traditional journalistic work and perceptions of creativity inhibition. It appears as if individuals with less interest in traditional journalistic work take more notice of the external conditions needed for creativity, for example, whether managers support unconventional problem-solving among the employees. The positive relationship between interest in technological interview methods and creativity inhibition suggests that people with an interest in using technology in a more untraditional manner, like using e-mail for interviews, *perceive higher levels* of creativity inhibition. It might be the case that information technology usage and great interest in technology enhances an individualistic form of creativity, not much restricted by environmental conditions.

One interesting finding of the current study is the positive connection between experience of IT-usage and perceived creativity, through the relationship

between number of years of e-mail usage/number of years of Internet usage and spontaneous creativity. This finding indicates that the longer the experiences of e-mail usage at work, the higher the level of perceived creativity. A first interpretation is that this relationship might be affected by other factors such as experience of journalistic work or age. However, comparisons of the groups that scored low and high on spontaneous creativity did not support the possibility of influence of the background factors on creativity. Analyses of group differences showed that the group that scored high on perceived creativity - regarding IT and communication usage - imply that there exists a connection between IT-usage and perceived creativity at work. A possible explanation is that a high frequency of IT-usage can give more time available for reflection and idea-generation. IT-usage might also generate information that is useful for creative ideas.

7. STUDY 4. INFORMATION TECHNOLOGY: JUST ANOTHER WORK TOOL OR SUPPORT OF CREATIVITY?

7.1 INTRODUCTION

This fourth study examined, from a journalistic perspective, the facets that constitute journalistic creativity, and the preconditions perceived to be important for creative performance. The focus is on how creativity can be nurtured in the newsroom and which the mechanics may be that might work as obstacles to creativity. Of special interest is the role of IT for journalistic creativity. Moreover, the intention was to get a more thorough understanding of the results in Study 2 and 3. Specifically, the ambition is to gather data in order to add to the answers of a research question of the thesis, which is:

- *What relationships exist between IT-usage at work and creativity among Swedish newspaper journalists? (Research question 2)*

7.2 PARTICIPANTS AND PROCEDURE

7.2.1 Participants

Interviews with six journalists were conducted. The respondents were selected with respect to their different backgrounds and differences in experience of electronic network usage in order to enable a rich amount of variability in statements from professionals. The ambition with the current study was not to get a representative result about a population of journalists. The main aim of the study was rather to get a deep understanding of the phenomena of interest, not to get statistical representative data of the sample. Therefore, the choice of respondents was based on a strategic selection of certain key persons with considerable experience of journalistic news work. Six Swedish journalists with a background of news journalism were interviewed, two women and four men. Four of the respondents had also participated in the survey (Studies 1 and 2). The age range of the participants was from 30 to 64 years. The number of years of work experience varied from 15 years to 32 years. Four of the participants had post-secondary studies with journalistic alignment. Five of the respondents had worked or were presently working as managers at news offices. Four of the respondents were interviewed at their work offices, and two interviews took place at Stockholm School of Economics.

The interviews with journalists were conducted in January - February 2002. The length of the interviews ranged from 45 minutes to ample one hour and all of them were taped with the permission of the respondents. A letter with pre-formulated questions was sent to the respondents some days before the

interviews took place. The respondents were informed about the background and purpose of the study. The interviewees were also informed that the data would be handled with confidential care.

7.2.2 Procedure

The analyses of the interviews were inspired by the abductive method. Abduction aims to notice the unexpected, that diverges from a pattern and to test new relationships between phenomenon and concepts. Focus in the analyses was on the unanimous statements and on statements that were unexpected and diverged from patterns of statements. The interviews were conducted as intended open interviews with specified areas of questions. The purpose with the chosen interview technique was to sample knowledge of the respondents' experience of the quality of the phenomena. All interviews were transcribed word by word and subsequent analyses were performed.

A measurement method used in the current study is the *critical incident technique*. The technique aims to let journalists judge the circumstances of perceptions of creative versus non-creative work situations. Each respondent was asked to describe two situations, one when he/she made a substantive creative work performance through IT-support, and another situation that was perceived to characterize a situation when the respondent felt he/she failed to accomplish creative work through IT-support. The technique is adapted from the work of Burnside, Amabile, and Gryskiewicz (for a more extensive description, see chapter 3) ³ that used the critical incident technique in a study of scientists and technicians. The intention was to identify certain crucial aspects of the specific situation that enabled and/or inhibited creative work through IT-usage for the subject at the time.

³ Thanks to Professor Teresa Amabile for kindly informing me about this description.

7.3 INTERVIEW QUESTIONS

The overall interview questions in focus of the present study were:

- What are the most salient elements in the genre of journalism?
- Which factors at work may, according to the respondents, support or hinder journalistic creativity?
- Is information technology of importance to journalistic creativity?

The specific questions are presented in Appendix D.

7.4 RESULT AND DISCUSSION

The result is introduced in terms of themes, representative of groups of statements and also of unexpected, single statements. Some quotations are reported in order to fortify the result and themes obtained.

A first main finding from this study is that the journalists mainly perceive important aspects of the *creative process*, rather than creativity as a notion. Individual intrinsic factors as interest, the ability to experience flow, and to be political incorrect together with a certain degree of cognitive information processing talent, were put forward as relevant individual characteristics of importance to the creativity process. However, *social psychological and structural aspects of the creative process* were even more profound. Interpersonal relationships with colleagues and interview persons, cooperation, informal meetings with colleagues, and leadership style were elements perceived to be supportive of creative accomplishments. *A second main finding* is that these journalists mainly focused on what constitutes the creative process; the *creative product* was hardly an issue that was discussed.

These main results will be discussed further in chapter 8 (General Discussion) in relation to the findings obtained from the previous studies.

7.4.1 The creative process

When asked about moments of experienced creativity, several of the respondents reported specific moments or situations at work and described what *constituted* these situations of productivity and creativity. The focus is mostly on the facets that contribute to the *creative process*. Some of the topics have to do with individual skills and abilities, of which the following main themes emerged:

7.4.1.1 *A detective work: Interest and curiosity*

Most of the interview persons stressed the importance of a great interest in a certain subject for ultimate creative performance. E.g., individual capabilities as interest, curiosity of a certain subject together with curiosity in a work situation are parts of the journalistic creative process.

A specific type of interest is by one respondent described as a kind of "*detective work*" because of the intricate questions the subject in point raises.

Something that makes me turn the matter over and over in my mind that makes me curious of something, it's not always that easy, a lot is routine. Two years ago I looked at Stockholm's Olympic Games application together with two other persons, an application that caused an awful lot of commotion and accusations of bribery and the like. Then the creative work started when we found a strange invoice in the city archives disclosing that 1, 5 million had been paid to the Swedish Olympic Committee. We couldn't understand WHY they had paid this money – it should have gone in the other direction, this was a big question mark, a piece of the puzzle was missing ... this might have been one way of arousing my interest in this role, I really WANTED to find out, how the heck does this function? To feel somewhat like a detective, that something kind of gets exciting ... otherwise it's obvious that you can feel that a subject is extremely important and ... therefore become creative.

Another frequent theme in many of the statements deals with curiosity and motivation to learn about a problem from different angles. One respondent compares the journalistic skills and work with *craftsmanship*. In order to create something really virtuous, the journalist must have inherent curiosity and also be able to put that little extra that is needed. One quotation illustrates this:

Some people say that it's an artistic profession; personally I see it more like craftsmanship. My grandfather was a cabinet-maker and sure as heck he could knock together simple wooden chairs even when he wasn't in the mood for it, but when he had to make a really beautiful escritoire he'd better be inspired. This goes for us too in a way, it is not a big deal to put together a few small news items and some press conference articles, but if you want something to be really good you'll have to feel inspired or feel creative and I believe that curiosity could be the most important part of it.

That interest and curiosity are elements of creativity is supported in the literature. Research into the creative performance of artists, musicians and authors, among others, describes the same characteristics as important qualities of the creative individual (see chapter 2).

7.4.1.2 *The ability to experience flow*

The respondents discussed the experiences of flow. The experience of flow is an intense feeling of joy and excitement. The flow theory predicts that experience will be most positive when a person perceives that the environment contains high enough opportunities for action (or challenges), which are matched with the person's own capacities to act (or his/her skills). The journalists experience the optimal flow feeling in the writing situation. One possible interpretation is that the flow experience is connected to an ability to shut out the surrounding world. As a matter of fact some of these journalists work in open-space offices with colleagues close to them. The ability to focus and shut out the immediate environment thus becomes an important part of the work process. The concept of flow might also be viewed as an extreme variant of *self-efficacy*. A usual assumption in the literature is that when both challenges and skills are high, the individual is not only enjoying the specific moment, but is also increasing self-esteem.

The experience of flow has been subject to research in different areas, such as art (see chapter 2, p. 33). Research applying the flow model has confirmed that people tend to report the most positive subjective experiences when both perceived challenges and skills are high and in balance. In such a situation, individuals report feeling more active, alert, concentrated, happy, satisfied, and creative. It is reasonable to assume that without an optimal level of efficacy beliefs with regard to a certain task, the flow feeling will not occur.

7.4.1.3 *The ability to be politically incorrect*

One theme emerged that focuses on the need for the journalist to be politically incorrect, in other words, for the journalist to have the strength to dig deeper into certain unpleasant issues, even with inconvenient truths as a result. The journalists stressed courage as a substantial quality of journalistic creativity. Studies of the life stories of magnificent geniuses' work have shown that to be rebellious and independent are qualities of successful individuals in the history of different areas such as art, literature and science (see chapter 2). Moreover, studies of original art students show that these tended to be sensitive, open to experiences, self-sufficient, uninterested in social norms and social acceptance. The present study indicates that news journalists might require the same types of attributes in order to enable the production of objective and meaningful news to the public.

7.4.1.4 *The ability to sift information*

A certain type of talent is the technical skill of searching for information. Since there are several search engines available on the Internet and extensive amounts of other databases, the skill of searching is pointed out as a substantial talent. The interpretation made here is that the skill to sift and analyze relevant information with Internet as a source is an aspect of the creative process. Journalists often *ask* for amounts of information in order to be able to choose the facts and information of relevance. This is, of course, an important aspect of a gatekeeper role, as well.

The finding is supported by the literature, since such cognitive capabilities as divergent and convergent thinking are suggested to be important for creative performance (see p. 32). Furthermore, information technologies require professionals who can search for, sort, and communicate information that is relevant, timely and comprehensible, which was also stressed by these journalists.

7.4.2 Work and social conditions for a creative process

7.4.2.1 *Interpersonal relationships*

In several interviews a theme emerged that focuses on interpersonal aspects of journalistic work. This indicates that a qualitative good individual contact – *personal chemistry* – with both colleagues and informants seems to be important for the respondents' perceptions of creative situations at work. To interact in a personal manner seems to be an important condition for the idea-generation process. The communication in this type of interaction appears to stimulate the possibility of viewing things from new perspectives. A dynamic interaction between a journalist and an informant also generates a creative process that continues when the journalist writes an article after the interview. The following quotation illustrates this condition:

Of course, there is some research involved in finding out about the person in question, but it's great fun to do this, to sit down with an author and discuss his or her books, their thoughts, beliefs, etc. It is so much fun and that's why it's also so nice to write afterwards, and then perhaps you sit down in peace and quiet the following day sorting out your impressions and putting everything down in writing ... that's why I often recall these interviews.

This finding is in line with contemporary research, in which some of the social-environmental variables that are assumed to operate as enhancing forces of creativity at an organizational level are mechanisms for considering new ideas;

immediate supervisor encouragement, cooperation, collaboration and constructive work-focused feedback (Amabile, 1996).

7.4.2.2 Cooperation across departments: a journalistic revolution?

A specific theme that came up during the interviews focuses on the interpersonal, cooperative parts of journalistic work. Even if, as will be discussed, the informal meeting seems to be of importance to journalistic creativity, cooperation between news journalists is not that common. One of the interview persons describes a news project as a "*cultural revolution*" because journalists are used to work alone and are often individualists.

The present result is supported by research finding that indicate that interpersonal cohesiveness can have positive effects on group interaction and creative performance. The reason is that interpersonal preference can increase creativity by allowing communication to be less inhibited (see p. 34).

7.4.2.3 The informal meeting

As mentioned before, cooperation among news journalists is not very common. However, the present analysis suggests that a colleague's opinion can be of importance to the journalist when there is a need for bringing up new ideas or for interpretation of problems from different perspectives. This social exchange often seems to happen by coincidence, in the coffee room or just simply when stopping by a colleague's room.

Seemingly, discussions with colleagues may bring out new angles of a problem or may be a source of new ideas. Thus, to be able to meet colleagues in an informal and spontaneous manner seems to be of importance to journalistic creativity.

The meetings are often quite informal ... what are we going to do today? Sometimes I've nothing really good going and you sit there talking about it. Then I'd say this is a creative place of work. Quite simply, people are able to speak their mind or joke about things. Often it's ... sometimes somebody comes out with something or exaggerates and you think, well, that's not such a bad thing after all, it was meant as a joke but it really was not that bad, it was ... why don't you do that? Sure you can do that! Let's try!

The finding that a colleague's opinion can be of importance to the journalist when there is a need for bringing up new ideas, and that such social interactions seem to happen by coincidence, can be likened to classical brainstorming conditions. In brainstorming, the interaction between people is the main source

of idea-generation. Meeting colleagues in an informal and spontaneous way can work in the same manner, albeit not equally strictly and directly structured.

7.4.2.4 Leadership as support of creative performance

The leadership style seems to be of importance to creativity. One finding is that a manager's role is to create a nice and pleasant atmosphere in the news office. Another important role, according to the respondents, is to support employees and to be free from prestige. However, one respondent also pointed out the negative aspects of the same managerial qualities. The respondent stressed the importance of a leader that can structure meetings and prevent too dominating individuals from squandering valuable meeting time.

We've had bosses here who were basically good and competent, but they had a hard time handling people and were quite domineering, which is hard to accept here and in most situations, well, except for in the military. But it's unusually bad here, especially when most things have to be done so quickly. As a matter of fact, we make one product a day, we don't have a lot of time, and we lose a lot if somebody is pushed ... well, it'll pass, but then it's too late. If that somebody is feeling down the whole afternoon, he won't be able to produce a good article. In my experience ... creativity is still there, of course, but to bring it out, to bring out the best and to encourage it, it's up to the environment, I believe management has a lot to do with it, yes.

To be able to structure meetings and prevent too dominant individuals from wasting valuable meeting time are management qualities suggested in the literature to be of importance to journalism in the digital age (Herbert, 2000).

The perception of management's supportive role for creativity is in line with earlier research (see chapter 2). Supervisor encouragement, constructive work-focused feedback, and a supportive and non-controlling supervision style are related to creative performance, according to some studies. On the other hand, competition of coworkers, surveillance and threatening critical evaluation are negative influences that undermine intrinsic motivation and creativity. Examples of other negative organizational influences are lack of communication, cooperation and rigid procedures. Furthermore, according to the literature, the supervision style is an important antecedent of individual creativity and a moderator of self-efficacy and work-performance relationship. These findings indicate that when supervision is supportive and non-controlling, employees might produce more creative work as compared to when supervision is controlling and non-supportive. However, it can also be assumed that a simply non-controlling supervision style might contribute to less productive work.

7.4.2.5 Deadlines as a force for creativity

Most of the interviewees stressed the positive aspects of time limits and deadlines in journalistic work. However, occasionally deadlines also might work in the opposite way, as they become obstacles to creative work, according to the journalists. The interpretation of this finding is that since a deadline implies a time limit, the journalist must possess an ability to handle this kind of stressor.

It works both ways, you know ... on one hand it gets an article out of you, but it can also get out of hand. There must be some kind of time limit, now you'll have to stop and then you can go back to the subject another time, but right then there'll have to be a finished product.

From this study it seems as if deadlines are important to creative performance. However, in earlier research, deadlines and time pressure conventionally are viewed as obstacles to creativity (see chapter 3). The reason for the opposite result here might be that short-time deadlines traditionally are well integrated as a daily routine in journalistic work. Deadlines are built into journalistic work and therefore accepted as a natural work condition. Instead of viewing deadlines as a negative aspect of work, the general attitude among journalists is that deadlines are working as a positive driving force.

7.4.2.6 Conditions that hinder the creative process

The factors perceived as obstacles to creativity by the journalists are distinctly different. Most of these are work routines and structural conditions in the organization. However, an individual type of obstacle is also perceived.

In the interviews, it was mentioned that several organizational events and conditions decrease creative endeavors among journalists. Formal meetings were seen as a hindrance to creativity. Such meetings were perceived to interrupt work processes, to be boisterous and non-creative. Instead, the creative news organization is suggested to give time and resources for informal meetings and a certain degree of flexibility as to deadlines, due to the threat of too shallow and non-analytical articles. Further, a tight economical reality seems to work as an obstacle to creativity, decreasing the possibilities of creative news topics. The following quotation may clarify the condition described:

Meetings! I can feel that formalities are extremely disturbing. I might be in the midst of thinking of some type of article series – thinking about who'd be able to do this, perhaps we'd engage this or that illustrator or whatever – and then I'll have to attend a budget meeting. That can be extremely disrupting. This goes for

the reporter role as well. Yes, it can be most interfering to have these fixed meetings.

Another topic that emerged besides routines focuses on the resources available in the organization. Economical limitations are experienced to be obstacles to creative work performance although they sometimes might enhance ideas and smart solutions.

Well, we're living with quite a straitjacket. I'm talking about bad economy. There aren't any resources, you know. It's really sad when you come up with an idea, perhaps we should go here or there, that's when money comes into the picture. In our case, in the very nano second the question comes up: How much does it cost?

A specific theme with organizational aspects that evolved in the course of the analyses concerns structures and systems within the company. One journalist described the need of a balance between chaos at one hand and order at the other hand. Huge economical lowering is seen as having serious negative consequences for creativity.

As described before, nearly every respondent reported deadlines as a positive condition for creative work. However, deadlines can also have a negative effect on creativity, according to the journalists. The reason is that time limits demand that you weed out subjects of interest or interview persons that otherwise would have been able to give valuable information about the subject matter in question.

Some examples of negative organizational influences on creativity described in the literature are rigid procedures, a disinterest in projects across departments, competition, and short deadlines (Amabile, 1996). The result from the present study stresses several of similar organizational factors as conditions that decrease creative endeavors among journalists.

7.4.2.7 Linguistic creativity

A unique theme that emerged is the notion of linguistic creativity. To use the language in a flexible and sophisticated way can be viewed as a type of creativity.

Yes ... linguistic creativity is important. You can't forget that when speaking of journalism. I just I talked about this at a meeting. You see, when you talk of journalism, a lot of people just think of good news or how things should be written and such, but to formulate words is linguistic creativity. It is ... it can be defined as having linguistic instinct. Good access to a vast vocabulary, which is

when people know a lot of words, but you must have access to it when you write so it comes out right. Personally, I think this is extremely important and it is sheer joy to read something that's well written. This is ONE type of journalistic creativity, which is very important because newspapers compete for the readers' time. To catch a reader's attention, the piece shouldn't just be interesting; it should also be well written. Then you are able to catch the reader in a different way. Well, that's creativity.

The subject of linguistic creativity is not a topic usually discussed in the literature on creativity. This can be interpreted as if this is a kind of creativity specific for journalists as a professional group, even if there are other professions embracing individuals with high linguistic creative potential. Maybe linguistic competence is also a competitive means for a newspaper; it could make the decisive difference in a reader's choice of newspaper.

7.4.3 Information technologies as work tools and channels for creativity

The journalists were asked how they use Internet, e-mail and intranet on a daily basis. Several interesting themes came up, some of which had to do with Internet and others with e-mail.

7.4.3.1 Internet as an analytic tool

The possibility of getting information quickly is seen as the main advantage of the Internet. This advantage is also the main difference in news journalism, according to the journalists. A predominant perception among the journalists as to the benefit of Internet is the possibility of using it as a sophisticated analytic work tool. Internet also allows access to quick information from relevant sources, and it has a potential to smoothly analyze a rather huge amount of information. Something that would have taken quite some time a few years ago is today possible to accomplish in a much shorter time.

The enormous amount of information on the Internet brings about both advantages and disadvantages in journalistic work. As will be discussed below, the present findings indicate that the amount of information creates problems in terms of the journalistic principle of original source control. Thus, the journalists in the present study have developed methods for evaluating the sources on the Internet. Internet also, according to the journalists, reflects a quick development from a society distinguished by a lack of information to a society with an abundance of information.

... You have to understand that within less than one generation we've gone from a society characterized by lack of information to a society characterized by a

surplus of information. And we who work with communication have to adapt our way of communicating to this situation.

One respondent in the current study stated that *"Internet is still like a huge trash basket."* The need to develop skills related to the search for relevant information is therefore strongly emphasized. Internet is appreciated as a work tool first and foremost, but also as a tool for making analytical connections between pieces of information and knowledge obtained.

All of the respondents reported that they take advantage of and use the Internet. This can be compared to American surveys (see p. 100) that indicate that IT today is much more an integrated part of journalistic work than it was just some years ago.

The need for journalists to develop both their attitudes and technological skills in order to be able to use new forms of information has been suggested. The argument stated is that the mission for the journalist concerns not only information delivery; it also deals with interpretation and processing of information. Seemingly, this statement also goes for Swedish journalists.

7.4.3.2 Internet and the control of the original sources

As described elsewhere, one problematic task with regards to Internet in journalistic work is the evaluation of original sources. The journalistic principle is well established and integrated in the journalistic profession, which supports journalists when they develop methods for evaluation of the original sources on the Internet. Some techniques to control these biases were suggested by the respondents: to check if the site has a webmaster, to check the size of the server, to phone the information manager of the company or organization, and to control if the information at the site is reliable.

Of course, the source is a problem, it really is ... at the same time it's something we've always had to live with since the birth of journalism, at all times. Who says what and why, and how can you trust it ... so that's actually nothing new. When the information flow increases, then there's also an increase in the number of cases where you have to take a stand. There is a need for source criticism ... but, then again, this principle has existed for many hundred years.

It's a major problem, you know, and I think that every statement has to be tried and verified – just like source criticism in other fields – and I think that the number of inaccuracies in certain types of journalistic material actually have increased in connection with the database handling. When I'm going to make an interview with somebody, then I look up what's in the article database on that

person and if there happens to be a mistake in there from 1967, this will remain ... Actually it's a matter of training. Journalists will have to be better when it comes to source criticism than earlier since the mistakes in the source material are so many more. And that's why you should actually check everything you know about this person during the interview. When talking to him you observe his body language and things like that. How does this function, is this a way to get by? ... To make an interview without eye contact is no good.

7.4.3.3 IT-usage and experiences of stress

A condition of general information overload was not common among these journalists, although nearly every journalist has experienced stress related to e-mail usage.

On the other hand, it's also quite risky because there's so much information available and I think that in a pressed situation it could be quite a temptation – if not to copy exactly – at least to imitate what's already there. So this can also obstruct your own creativity. There is already proof of this, things that have been copied from the Net and published under one's own name. This goes for all ideas, you can't actually patent ideas and everybody is chasing new ideas, good ideas, that's hard currency today, you know, so ... both yes and no, it can both obstruct your own creativity and encourage it, those are complicated connections.

E-mail often contains non-relevant messages, which require valuable time to handle. The interpretation is that with a high level of e-mail communication and a huge amount of information on the Internet to handle, the cognitive demands might prevent efficient creative performance. The respondents discussed the issue of information overload connected to e-mail communication:

I'm also in charge of a group mail called "Foreign Affairs" which is mentioned in the newspapers and, some way or other, those addresses spread and I receive all sorts of things which have absolutely nothing to do with us: we're offered anything from sexual aides to how to start up a business. I do have a certain feeling that we end up on mailing lists and now and then we try to put a stop to it. We've filters like everybody else, of course.

I don't think it's that stressing. There's only one practical situation when I feel stressed and that is when I work in London and I open my e-mail after a couple of days and there are tons of it. That'll give you a lot of work and makes you irritated. Otherwise you get into the habit of it, you throw away a lot, and I'd say 50-100 mails a day – well 50 at least. I don't even have to open them. I recognize the trash. I can't really call that stressing but it is an irritating factor

and I feel a certain threat. If this grows to 150 mails a day it won't work out, you'll have to start over with a new address or a new identity.

The finding that e-mail usage might be connected to experiences of stress is not surprising. The use of information technology combined with other stressors at work can influence health and is also age related (Seppala, 2001). Furthermore, research on creativity shows that stress can affect performance negatively (see p. 39). Stress, information overload, and a low level of self-efficacy can effectively decrease creative accomplishments. Moreover, these empirical findings have revealed a link between levels of self-efficacy, negative reactions from employees when they perceive that they, or their work groups, are not capable of high levels of performance, and stressors at work.

7.4.3.4 Information technologies ease the routines and save time

The main benefit of information technologies as Internet, e-mail and intranet, according to the interviewed journalists is the time they save and the rationalization of routines. The journalists pointed out the positive effects of information technologies:

To us speed is immensely important and also that our creative ideas can be realized. And in this respect newspapers have improved a lot, ideas can be carried out in quite a different way, immediately. This doesn't just mean us but when you look at other newspapers as well, actually you can read an enormous amount in the newspapers – current stuff.

Sometimes you almost feel ashamed of how easy it is to do certain things when you compare how it was before. Knowledge gathering is so much faster now and so much easier. It's still unbelievable and even if we keep doing this every day, I think it is quite amazing how you can gather data and how quickly you can become an expert in a field. At any rate, considering our limitations, of course, there is certain superficiality here, but still to quickly put together things you couldn't do before ... that has to do with creativity, doesn't it?

Organizational formal routines and structures can hinder creativity (see Amabile, 1994; 1996a; 1996b;). Information technologies can, however, work as resources that reduce these negative organizational consequences. It might be assumed that information technologies indirectly are channels of creative endeavors, since the time-saving benefits of IT-usage contribute to the possibilities of getting ideas more quickly and testing these ideas more rapidly than before.

The current finding indicates that the technologies might contribute to this.

7.4.3.5 IT-competence and age of user

A dominant theme in the study is that IT-related competence and degree of usage are related to age. The respondents claimed that there are great variations in IT-skills among journalists as a group. The variation is proposed to be age-related, suggesting that younger journalists are more confident in handling the computer and information technologies than older ones.

Also, the attitude towards IT seems to vary according to age:

Those in my surroundings have a different attitude towards IT than many in my generation. For me to trust it I'll have to understand how it functions, while they don't have this need. They have the same attitude towards the computer as I have to the copying machine. Should I, in order to make a copy, insist on understanding what is happening, then I would never dare to make a copy. Or a phone call ... if to use this phone I'd have to understand how the electrodes are connected, I'd never make a phone call, and it's the same thing with IT that you still have to do it ... but there our attitudes are somewhat different.

There are great variations, extremely great, and they are age-related in many cases. Not in all cases, but in many cases and my cousin's kids are better at this than me, my father is worse than I am.

The fact that younger journalists are perceived as more competent in handling computers and information technologies is a view that has support in earlier research on IT-usage (see 2.6.3.3).

The literature suggests that self-confidence has been assumed to be one of the most essential characteristics of creative persons. This indicates that in order to complete a creative work performance, individuals should hold a sufficient degree of efficacy beliefs about their creative capability. High self-efficacy can work as a moderator of information-seeking, since individuals with high self-efficacy seem to seek, integrate and use information more effectively than do those with low efficacy beliefs. Research further suggests that individuals low in efficacy beliefs seem less capable of integrating information and using it effectively. Journalism concerns information handling to a great extent, and self-efficacy can play a role both in specific work tasks, as when using IT, and in creative work performance in general.

7.4.3.6 E-mail and Internet as channels for ideas and tips

Internet has another quality, according to a couple of the respondents, implying that the search for information on the Internet can inspire and give new ideas. The intuition of the journalist seems to be important here. It was suggested that if a certain topic is interesting to a journalist, then it is probably interesting to the public as well.

We all know that it's easy to stumble across things on the Internet that you didn't even know existed; it's like browsing through a newspaper. You click on something and all of a sudden you get an idea, in our case it could be anything from copying, you see that another paper has done something one way or another; we can do the same but with Swedish overtones. Even if we sometimes miss it too, I think it's amazing and so do the readers, then you shouldn't just be amazed yourself or tell somebody else, but you try to make something out of it in the paper if you can. Sure, then Internet's chance factor is important, I think. You catch sight of something; you end up here and there when you thought you were somewhere else.

This finding is in contradiction with a British investigation on how the Internet influences the information environment in the newsroom, where journalists were quite negative about the idea that they could "surf the Net for stories" (see p.39.) However, it should be noted that some journalists in the present study also said that they never get ideas via the Internet.

For some of these journalists, both Internet and e-mail are from time to time sources of ideas. Internet gives the journalist a possibility to get a quick picture of a specific event, as during the attack against the World Trade Center, September 11. When the first information is obtained, it is possible for a journalist to work and develop a subjective angle of the same event.

The main benefit with e-mail as a source of new ideas is the possibility of getting a tip from readers and the public. Several of the journalists meant that they receive more tips today when they have e-mail than they received before.

A lot comes by e-mail. Then again e-mail is good because you can save ideas too and it's quite possible that this can be developed further and it also has thanks to web discussions, well, almost everyone has those. Web papers have quite a few debates about everything on earth and some of it could be used in the paper as well, you can get ideas, but I don't think too many ideas come from there actually. On the other hand, you can use the debate in the paper, you can sum up the debate if it deals with current issues, and you can use a few

contributions to the debate in the paper. Of course, it's incredibly much easier for those used to sitting in front of a computer to debate.

The ability to sift information quickly and correctly has become more important than ever according to the interviewees. Internet contains a huge amount of information and the development towards a more complex society enhances the need of journalistic skills in terms of gatekeeper and information sifter.

Anyone who is creative knows how to search too; you can say that a new form of creativity has entered here. After all, everything is there and the search engines are fabulous and still not, you'll have to be a little smart as well and find what you are looking for. How to search is ONE type of creativity.

The journalists stressed the development towards a more significant role of news journalism in the future. The predominant view is that a future newspaper would still have the quality stamp as a warrant for good and reliable journalism. Journalistic methods and skills will, according to the respondents, become even more sought-after, since ordinary people do not have the time or skills for selecting relevant information from all sources available. The newspaper as a legitimate disseminator of information is proposed to be even more important in the future. Information being available from a variety of sources, the traditional newspaper as a guarantee for reliable news will be even more essential to the public and the individual reader, according to these journalists.

Let's say that Internet has strengthened my conviction that there is a need for newspapers. Simply because the information flow is so enormous and you have to have a sender that you can trust and newspapers, no matter if they appear on the Net or if they are conventional papers, are that kind of sender. It's this kind of information you have to get from the Internet: Who is the sender?

This job, if anything, has become more important, but it's not only the sorting out, it's just as important to put every little piece into its proper context and not just present a few facts. Also to get people interested in things they didn't know they were interested in, because this is a task that you can never take on yourself, you have to know that you are looking for something before you look it up, whereas if you can read about it in the paper then you can notice that this is interesting after all, I had no idea of this. You did not know that you were looking for it, so to speak.

7.4.3.7 E-mail – a non-transparent communication tool

Different communication channels have different degrees of 'richness' (e.g. social presence and communication cues). The journalists in the present study

were asked if they ever used e-mail when conducting interviews. None of these respondents did, with the exception of occasionally mailing some brief questions to the interviewee.

The main advantage with e-mail, according to the respondents, is the possibilities of being in contact with the readers of the newspaper. It is usually the reader who makes the contact. E-mail gives the reader a convenient possibility to reply to an article immediately and directly to the journalist.

It can be discussed whether new technologies really have changed the relationship between journalists and the public, or whether it is the perception of the journalist that has changed. For example, with the radical swiftness and progress of communication availability through e-mail and Internet, the journalist might perceive a shorter distance to the public and the reader. It would be interesting to know if readers perceive the same change in communication access in relation to journalists.

E-mail is, according to the journalists, a valid communication tool for receiving or sending more basic information. However, it is not a useful interview instrument.

... Let's assume that I have to make an important interview with somebody and that I have two questions to that person. I could handle that by e-mail. When you meet the person you pick up a lot from his body language, I pick up a few things watching him talk, but I lose ALL this if I mail, I even lose certain identification. It might be the secretary who sends something back, you know. So e-mail and electronic distribution forms as a whole, including fax machines if you want, are extremely good ways of getting information, but they're NOT a good tool when you are making an interview.

If, on the other hand, I want to know the snow depth in Västmanland since 1885, then it's OK if SMHI gives me the information by mail or if they call me up, but it is even faster if they mail me, that's perfect.

Research on e-mail usage from a communication perspective often shows that e-mail is perceived by the users as rather *non-transparent*, e.g. it is a communication channel that hides a lot of the communication cues (e.g. gestures and face expressions) that are needed for interpretation in communication. As an example, media richness theory proposes that communication technology restricts and determines the outcomes of communication through these technologies (see chapter 2). According to the present finding, the main perceptions among these journalists are that e-mail does not give the same information about a person as a face-to-face interview. Hence, in terms of

richness of communication cues, e-mail is not viewed as a possible substitute for the face-to-face meetings or even for a telephone interview.

7.4.3.8 IT and the journalistic gatekeeper role

One topic of interest that emerged from the analyses is related to the gatekeeper role of journalists. The journalists agreed that the gatekeeper role is important and will be even more so because of the information overload in society today.

The journalists were of the opinion that the journalistic role as a gatekeeper of information and news would become even more important in the future.

If anything, I think journalism has become more important, since it's not lack of information that is a problem to the average Swede today but rather the abundance of it, not being able to weed out material, it has to do with lack of time and energy to do the sorting out, or money for that matter.

The role of the journalist has, if anything, become more important. It's less about picking out information than it was 20 years ago, or let's say 15 years ago. Then it was more to pick out things that people couldn't get hold of themselves. That role is still there, that role is still important, because everything is not on the Net. The Net will not hold the prime minister responsible, the Net will not go through journals, the Net won't reveal scandals by itself, but the great change is that those interested can obtain a lot of this press conference information themselves on the Net. So if I am going to cover this as a journalist, I'll have to give this added value, and this added value is to put this into a context, to explain what this is really about and not just repeat what has been said, which is bad journalism in any case. But this was easier to get by with 15 years ago, because the public did not have access to this kind of information at the time.

The emphasis on the future journalistic role as gatekeeper of information and news is in concordance with U.S. studies. These indicate that the journalist's traditional role as the guardian who selects which news are appropriate and important enough to deliver to the reader, is still valid even if in a revised form (Singer, 1997; 1998). According to the result of this study, Swedish news journalists are of a similar opinion: the gatekeeper role will be even more important due to the huge amount of information delivered to members of society today.

When it comes to the development towards a society distinguished by information abundance, the need for journalistic competence and skill is believed to increase.

7.5 CONCLUSION

Study 4 aimed to answer three questions:

- What is the most significant element of the genre of journalistic creativity as defined by the journalists?
- Which conditions at work may, according to the respondents, support or hinder journalistic creativity?
- Is information technology related to journalistic creativity and in what manner?

7.5.1 What are the most significant elements of the genre of journalistic creativity?

The respondents proposed individual qualities of importance for the *creative process*. In sum, the qualifications suggested were: interest, the ability to experience flow and to be politically incorrect, as well as a certain degree of cognitive information processing ability. These were put forward as relevant personal qualities of importance to the creative process.

A theme focusing on the creative product was *linguistic creativity*, implying the ability to use the language in an appropriate and unique manner. It is remarkable that the creative product was hardly believed to be important by the respondents.

7.5.2 Which conditions at work may support or hinder journalistic creativity?

The factors perceived as support of the creative process have mainly to do with social-psychological and organizational factors. Relationships with colleagues and interviewees, cooperation, informal meetings, deadlines and leadership style were factors perceived to be supportive of the creative process. Factors perceived as obstacles to the creative process are organizational, i.e. formal meetings, deadlines, routines, scarce resources, and structures.

7.5.3 Is information technology of importance to journalistic creativity and in what manner?

According to the findings, there is a connection between creativity and information technology usage. However, the link is indirect since technology seems rather to enhance or hinder creativity than being a direct source of ideas and creativity. Nevertheless, Internet can be used as an analytic tool, and both e-mail and Internet generate journalistic ideas from time to time. Negative

consequences of IT-usage concern difficulties to evaluate the sources of information. Also stress related to e-mail usage has been reported.

The journalists stressed that the role of news journalism will become even more significant in the future. The predominant view is that the newspaper will keep its quality stamp as a warrant for good and reliable journalism and be the disseminator ensuring qualitative good journalism. Journalistic methods and skills will become even more sought-after since ordinary people neither have the time nor the relevant skills for choosing information from all sources available.

8. GENERAL DISCUSSION OF THE STUDIES

8.1 INTRODUCTION

In the present section the main results and an integrated discussion of the general findings of the thesis work are addressed. As was outlined in chapter 1, the *first objective* of the present thesis project was to explore psychological factors' influence on how, when and why IT is used at work. The *second objective* of the thesis was to examine the relationship between IT-usage and creativity. The examinations were limited to a specific work context, news journalism.

The studies aimed to answer the following research questions:

- (1) *Which are important perceived aspects that can explain Swedish daily newspaper journalists' IT-usage, communication and perceptions of effects of IT on communication?*
- (2) *What relationships exist between work-related communication and IT-usage and creativity among Swedish newspaper journalists?*

8.2 SUMMARY OF FINDINGS

8.2.1 Study 1. Journalists' attitudes towards usage of electronic networks at work.

The explorative interview study resulted in two main findings:

1. IT-usage and changed relationships

A predominant attitude exists among journalists focusing on the relationship with the reader. The journalists' view is that they've got easier communication access to the reader, at the same time as the reader has greater possibilities of getting into contact with the journalist today. IT is viewed as a cause of these changes in communication patterns and relationships.

2. Structural changes of journalistic work

A governing attitude that focuses on more structural changes such as consequences of IT-usage exists among journalists. Information technologies are mainly seen as efficient work tools that have made work procedures more efficient.

8.2.2 Study 2. Journalists as IT-Users: General versus specific measures of self-efficacy and attitude

1. Background variables as a source of variation in IT-usage

The variance in IT-usage explained by the background variables in the models, ranged from 2 percent - 9.7 percent.

2. Main sources of variation in IT-usage and communication at work

The variance in IT-usage and communication at work was explained by attitudes, experience of IT-usage, interest in traditional journalistic work, and generalized work self-efficacy.

3. Attitudes towards IT-usage at work

Regarding IT's effect on communication effectiveness at work, the variance was explained to nearly 26 percent in a regression model. Three attitude factors were significant in this analysis:

- *Attitude towards IT as a communication tool,*
- *Attitude towards IT as a tool for cooperation, and*
- *General attitude towards e-mail usage at work.*

4. Test of the relationship between self-efficacy and IT-usage at work

The correlation analysis confirmed *hypothesis one*, i.e. a positive relationship between specific measures of IT-related efficacy beliefs and measures of IT-usage.

Hypothesis two proposed that the specific measures of self-efficacy would explain more of the variance in measures of IT-usage and communication at work than would general work self-efficacy. The hypothesis was supported; in regression models, either computer self-efficacy, intranet self-efficacy, or Internet self-efficacy was a significant explanatory variable.

General self-efficacy, however, did not contribute as a significant variable in any of the estimated models.

5. Test of gender differences in self-efficacy

Hypothesis three proposed that there would be significant gender differences in specific self-efficacy in favor of men. The results showed gender differences in the measures of specific self-efficacy, and therefore the hypothesis was supported. Men scored significantly higher than women on intranet efficacy and on computer efficacy beliefs.

6. Group comparisons between low and high efficacy scorers

Hypothesis four suggested that there would be significant differences between the two groups that scored low and high in self-efficacy beliefs (computer self-efficacy, Internet self-efficacy, and intranet self-efficacy). T-tests of mean differences supported this hypothesis, in favor of the group with high efficacy beliefs:

- *General attitude towards Internet usage at work.*
- *General attitude towards e-mail usage at work.*
- *General e-mail usage at work.*

In the measure of Attitude towards IT as a communication tool, individuals who scored low on computer efficacy held a more positive attitude in comparison to those who scored high.

7. The relationships between attitudes and behaviors (IT-usage)

An unexpected result was revealed regarding the attitude-usage relation, since individuals with a negative general computer attitude appeared to use internal media more frequently than individuals with a positive attitude. The same finding emerged in the analysis of general communication usage at work.

8.2.3 Study 3. Can IT support your perceived creativity?

1. Group differences in self-efficacy beliefs

The result of tests of group differences showed that men in the sample were significantly more confident in terms of their capability than women, when confidence was expressed as:

- *Internet self-efficacy,*
- *Computer self-efficacy, and*
- *General work self-efficacy.*

2. IT-usage and creativity

Experience of IT-usage was positively related to spontaneous creativity. This finding indicates that the longer the experience of e-mail usage and Internet usage at work, the higher the level of perceived creativity.

3. Sources of variation in spontaneous creativity

The variation in spontaneous creativity was explained to nearly 23 percent by the variables:

- *Solving challenging problems through support of IT- and communication channels,*
- *General work self-efficacy,*
- *Number of years of e-mail usage, and*
- *Interest in cooperation, contacts and individual development.*

4. Self-efficacy as a source of variation in spontaneous creativity

Spontaneous creativity was explained by the efficacy variables Creative efficacy and General work self-efficacy which accounted for approximately 10 percent of the variance.

5. Self-efficacy, interest, IT-usage and creativity

In general, the results indicate that both generalized work efficacy beliefs and IT-usage at work were related to perceived creativity among journalists in the sample.

Furthermore, the findings imply that individuals with high creative self-efficacy use IT technology to solve problems at work more often than individuals who report low creative confidence. The results also supported the assumption that high interest in cooperation, in making contacts and in personal professional development, is related to a perceived high creativity.

8.2.4 Study 4. Information Technology Usage and Creativity

1. Elements of journalistic creativity

A central finding was that the term creativity is often associated with a process rather than a product. *Interest* in work and *journalism as a detective type of work* and *as a craftsman-like work*, were put forward as elements of the journalistic creative process.

The emphasis on *interest* in work is in line with the results from Study 3, where the factors of importance to creative work were, among other things, interest in cooperation, contacts and individual development. One theme emerged focusing on the creative *product: linguistic creativity* - the ability to use language in an appropriate and unique manner.

2. Support of and obstacles to journalistic creativity

The factors seen as supporting a creative process were individual intrinsic factors such as the ability to experience *flow*, to be *politically incorrect*, but also a certain talent of cognitive *information processing and sifting*.

The emphasis on information processing capability confirms the results of Study 1, where the *ability of sifting information obtained on the Internet* were stressed by the respondents as important for the production of ideas.

Internet as a chance generator of *ideas*, e-mail and Internet as channels for *ideas and tips* were also factors perceived to be part of the creative journalistic work.

Social-psychological conditions were even more profound. *Interpersonal relationships* with colleagues and interviewees, deadlines, *spontaneous* meetings with colleagues, and *leadership style* were elements perceived to be supportive of creativity. The factors perceived as obstacles to a creative process were formal meetings, deadlines, routines, and scarce resources.

3. The role of information technology for journalistic creativity

One finding is that the Internet is used as a *general work tool*, but also as a *support of analytic work*. Some of the negative consequences of IT-usage perceived are problems with *source control* and *experiences of stress related to e-mail usage*. Internet is appreciated as a factor of chance that *generates ideas*, as well as e-mail and Internet are used as channels for *ideas and tips*.

The relationships between IT-usage and creativity might be indirect since the IT technologies rather seem to enhance or hinder creativity than being a frequent source of ideas and creativity.

4. Information technologies and future journalism

The journalists stressed the development towards a more significant role of news journalism in the future. The dominant view was that the newspaper would have a quality stamp and be the disseminator that ensures qualitative good journalism. Journalistic methods and skills will, according to the respondents, become even more sought-after since ordinary people neither have the time nor the relevant skills for selecting information from all available sources.

8.3 AN INTEGRATED DISCUSSION OF THE MAIN FINDINGS

Some main findings are of certain interest to discuss. First, the results show that information technologies have had an impact on journalistic work and work conditions. In other words, information technologies have changed how tasks are performed, or more specifically, have enabled the access of increased information. According to Sproull and Kiesler (see chapter 1), these changes are *the first level effects* of IT. Furthermore, IT-usage and electronic communication have affected the social relationship between journalists, but also between the journalist and the public. This is the *second level effect* of IT, according to Sproull and Kiesler. As was pointed out before, these structural changes might affect the journalistic work role both positively and negatively. IT's positive impact concerns new information possibilities, work collaboration, and work efficiency.

Furthermore, the results show that IT-usage and communication at work, to some degree, were perceived as supporting creativity. A negative aspect of IT-usage, on the other hand, is the threat of information overload and related stress,

an issue that was revealed in the fourth study. With a high frequency of e-mail correspondence and a huge amount of information to handle, the cognitive demands might actually hinder efficient creative performance. Stress, information overload, and a low level of self-efficacy each have the potential of decreasing creative accomplishments. As was discussed elsewhere, empirical studies have exposed a link between levels of self-efficacy, but also negative reactions from employees when they perceive that they, or their work groups, are not capable of high levels of performance and stressors at work.

In sum, Study 2 gave some data about information technology (IT) -usage and factors related to IT-usage among news journalists in Sweden. Some unexpected results of interest were found and will be discussed in relation to the current findings. In Study 3, relationships between IT-usage and perceived creativity among news journalists were analyzed. The factors of importance for creative work through support of information technology usage were, among other things, general work self-efficacy, number of years of e-mail usage, and interest in cooperation, contacts & individual development.

The present thesis work aimed to answer two main research questions. The main conclusions are presented in relation to each research question.

8.3.1 How IT is used by journalists

The first research question examined is:

What are the important perceived aspects that can explain Swedish daily newspaper journalists' perceptions of effects of IT on communication at work and IT-usage at work?

8.3.1.1 Internet as an infrastructure of efficient work

The results of the studies show that journalists had acquired knowledge about *how* to integrate Internet into their existing work procedures mainly through their own experiences. Information technologies have replaced earlier work procedures and were also seen as *an infrastructure* for working in a better and more efficient way. Internet and e-mail were seen as tools for *new contacts* with people but have not replaced face-to-face meetings or telephone contacts as a first choice for communication purposes.

8.3.1.2 Positive and negative aspects of Internet usage

Regarding the journalistic principles of objectivity and source controls, a conflicting picture emerges. On one hand, Internet was seen as a possible tool to

control journalistic work, because paper readers have better access to the sources of the articles. On the other hand, the current results indicate that journalists themselves often doubt the reliability of the sources on the Internet. Some journalists have developed certain routines for checking the validity of the information. However, the risks of false information are still seen as negative aspects of both Internet and e-mail communication.

According to the descriptive statistics in Study 2 (see Table 4, p. 79), Internet and e-mail are the most frequent IT applications used by journalists, compared with intranet. However, the individual variation in usage is greater regarding intranet usage. Heavy Internet usage among journalists is hardly surprising; Internet has replaced other traditional sources, such as archives. However, e-mail has not replaced the telephone for personal communication. Instead, when taking an initial contact with an informant/interviewee, or when collecting facts and doing research, e-mail was considered useful.

8.3.2 Why IT is used by journalists

One conclusion of the studies is that information technologies are mainly used because they have reduced some previous work tasks and have enabled a more efficient work performance. Internet gives access to information more rapidly and smoothly than before, when, for example, archives were commonly used. However, problems with source controls and the risk of false information on the Internet force journalists to develop certain routines in order to check the information obtained. E-mail is also used because it allows contacts to be taken smoothly and efficiently. Intranet is utilized primarily to get access to booking systems (conference rooms), phone addresses and similar basic information.

8.3.3 Perceptions of effects of IT on communication at work

8.3.3.1 Attitudes towards IT

Several variables explained how journalists perceive *the impact of IT on communication at work*. The variation was explained by the variables attitude towards IT as a communication tool, and as a tool for cooperation, computer self-efficacy, interest in traditional journalistic work, general attitude towards e-mail usage at work, and Intranet self-efficacy. Attitude towards IT as a communication was negatively connected with the perception of impact of IT on the amount of communication at work. That is, the more negative attitude towards IT as a communication tool, the larger the effect of IT on communication is perceived to be. In conclusion, the analyses showed that *the more negative attitude towards IT as a communication tool, the larger impact IT is perceived to have on the quantity of communication at work*.

The negative relationship between attitudes and IT-usage in the analysis is somewhat inconsistent with the assumption of the positive influence of attitudes on behavior. As Breckler (1990) points out, this kind of result creates an interpretational ambiguity because it suggests that behaviors decrease in favorability as attitudes increase in favorability. Nevertheless, as was suggested earlier, the assumption is that attitudes vary with the task at hand. A reciprocal interaction might influence both attitudes and behaviors (i.e. IT-usage).

8.3.3.2 *Self efficacy beliefs and IT-usage*

Regarding the impact of IT on communication, journalists with high levels of computer efficacy beliefs seem to recognize the impact of IT as more pronounced than journalists with lower efficacy beliefs. Group comparisons revealed that in terms of attitude towards IT as a communication tool, individuals with high levels of computer self-efficacy used e-mail more frequently and held a more positive attitude compared with individuals with low levels of computer self-efficacy. This finding suggests that the relationship between levels of efficacy, attitudes and usage might be reciprocal, in line with the theoretical basis of Social cognitive theory, suggesting an interaction between the individual and her environment. The assumption here is that levels of self-efficacy are not stable, instead vicarious experiences and verbal support, among other sources, are supposed to influence the level of efficacy beliefs (Bandura, 1977).

Affective reactions to the task at hand can influence the cognitive and behavioral functioning required for effective electronic search as in Internet usage. As a consequence, the sources of efficacy beliefs regarding IT-related work tasks have the potential to affect work performance in both positive and negative directions.

8.3.3.3 *Interest*

The role of *interest* should be noticed. Interest appears to be important in understanding attitudes towards IT-usage (Truedsson & Sjöberg, 2000), and antecedents of work motivation (i.e. willingness to work). Findings from the present studies show that interest in technological interview methods was related to how journalists appreciate the influence of IT on communication at work. The greater the interest, the more marked perception of IT's impact on communication. The journalistic professional role has traditionally been focused on the journalist as a gatekeeper of information and as a communicative resource *per se*. It is reasonable to assume that this traditional view of the journalistic professional role influences *how* journalists perceive IT and work

via contemporary communication channels. As the findings from Study 4 show, journalists assume that the journalistic gatekeeper role will carry still more weight in the future, due to the increasing and immense information mass delivered by Internet and electronic sources. It could be speculated whether, in order to take into consideration and keep this conventional journalistic role, new communication forums and information sources might be regarded not only as possibilities, but also as threats to the classical journalistic professional role.

The finding in Study 4 regarding the role of cooperation is in agreement with some of the findings from Study 2, where it was revealed that one of the factors that explained perceived creativity was *interest in cooperation, contacts and personal development at work*.

8.3.4 IT-usage and Creativity

The second research question examined is:

What relationships exist between IT-usage at work and creativity among Swedish newspaper journalists?

8.3.4.1 Experience

The analysis showed that there was a *direct* statistical relationship between IT-usage and spontaneous creativity. Internet usage, as only measure of IT-usage at work, explained a part of the variance in spontaneous creativity. However, experience of IT-usage was also positively related to spontaneous creativity. This relationship may be understood from several perspectives. A plausible interpretation is that individuals that perceive themselves as creative also might be more predisposed to try new things, such as new technologies at work. Another reasonable suggestion is that an extensive experience in communication via e-mail and Internet usage can result in more time available for reflection and idea generation, thanks to efficient usage of IT. As a result, an IT-experienced individual might actually appreciate that she *is* more creative, than an individual with shorter experience and less frequent usage of IT. In line with this argumentation, extensive and sophisticated IT-usage can nurture creativity, since it also increases information availability. Moreover, the result of the interviews in Study 4 supports the IT-creativity link, since some of the journalists proposed that a broad search on the Internet might give inspirations and new ideas. This finding is contrary to what was found in a similar British study among journalists (see p. 38). The issue of the relationship between IT-usage and creativity will be discussed further in section 8.3.4.3.

8.3.4.2 *The two-directed role of self-efficacy*

Worth noting is the relationship between general work self-efficacy and spontaneous creativity. Traditionally, a satisfactory level of self-confidence is assumed to be one aspect of the creative personality. As a consequence, it is possible that a certain degree of generalized work efficacy beliefs might be necessary for creative work. Nevertheless, the data did not confirm any relationship between IT-specific efficacy beliefs and perceived creativity. If IT-related work tasks play an indirect role for creative performance, as will be addressed later, the lack of relationship between IT-efficacy beliefs and creativity is understandable. One plausible explanation is that general work self-efficacy and computer self-efficacy are different constructs and are assumed to measure different domains of self-efficacy. Even if a certain degree of generalized work self-efficacy is related to creativity at work, the relationship between computer self-efficacy and creativity is not necessarily the same. Moreover, levels of self-efficacy are assumed to fluctuate with type of task and knowledge domain.

As the studies in the thesis show, self-efficacy is related to both spontaneous creativity and IT-usage among journalists. In Study 2, the *specific* self-efficacy variables computer self-efficacy, intranet self-efficacy, and Internet self-efficacy were significant contributing factors in regression analyses of general IT-usage at work. Furthermore, in Study 3, *general* work self-efficacy and number of years of e-mail usage explained a part of the variance in spontaneous creativity.

Today many computerized work tasks, such as word processing, are routine and commonplace among journalists. An interesting question is whether it is possible that a high level of efficacy beliefs can be ineffective and influence work performance in a negative way. Following this line of reasoning it might be assumed that too high levels of efficacy beliefs can lead to standard responses and behaviors with limited improvements of creative performance, which might explain the findings of the present study. This is in concordance with results from research findings that indicate that the self-efficacy-performance link might, in certain contexts and contrary to what is generally claimed, *be negative instead of positive*. The suggestion is that increasing levels of self-efficacy at the within-person level of analysis may actually *lower* performance because high self-efficacy influences resource allocation negatively, which in turn decreases performance.

As described in chapter 2, other studies have revealed similar results, indicating that high efficacy beliefs can lead to overconfidence in ability and less contribution of resources to the task. In sum, it is argued that self-efficacy's effect on performance would be negative under certain circumstances. The

assumption is that the negative relationship depends on the strength of an individual's belief in terms of meeting her goal. Thus, an individual with high self-efficacy level is less likely to allocate time and effort enough to reach the goal, compared to someone who believes she is not going to meet her goal. The motivation and incitement are simply missing.

8.3.4.3 IT-usage: the ingredient of two kinds of creativity?

As discussed before, findings from the current studies show that there seems to be a more *indirect* connection between IT-usage at work and perceived creativity among journalists.

Information technologies put new demands as flexibility, learning, cognitive functioning, communication, cooperation, and information retrieval on the individual. As noted before, this is especially typical of journalists because of their built-in professional role as gatekeeper of analytic information delivery. Modern work conditions demand that the individual define, plan and conduct work on her own since external bounds as regulated work times, work schedules and employment agreements are more or less replaced by subjective and individual regulations. One consequence of this boundlessness or changed boundaries at work is that it requires a certain level of creative potential on part of the individual. The individual has to solve work tasks independent of externally clearly defined expectations; she herself is responsible of making the best choices possible in terms of work quality.

The question is whether IT per se requires new qualities of journalistic creativity other than what is necessary for the traditional production of ideas of articles? Findings from the current studies suggest that there also seems to be a more *indirect* connection between IT-usage at work and creativity among journalists. The direct connection is, for example, when e-mail is used as a source of new ideas, e.g. the possibility of getting tips from the public, or when the Internet is a factor of chance that from time to time generates journalistic ideas by coincidence. Some of the journalists state that they receive more tips today when they have e-mail than they received before. It can thus be assumed that there exist at least two types of creativity in the journalistic context, a *production-oriented creativity* and a *process-oriented creativity*. A *production-oriented* creativity is necessary for the development of ideas to concrete journalistic products. Not every tip or idea result in creative achievements, but the possibilities of new ideas and creativity might increase by means of the increased information access offered by IT. The production-oriented type of creativity aim focuses on the accomplishment of journalistic products, such as articles.

Furthermore, the present findings suggest that Internet is viewed as an analytic tool, IT is then an indirect source – an important infrastructure – of the creative products accomplished by journalists. IT can thus contribute to a type of creativity that can be defined as a *process-oriented creativity*. This kind of creative talent includes cognitive and emotional capabilities of using information technologies and other work tools efficiently in order to develop and maintain the subjective and individual regulations necessary for modern work as suggested. As argued before, one consequence of changed boundaries at work is that a certain level of creative potential of the individual might be required.

8.4 RESEARCH IMPLICATIONS

The perspective chosen is the psychological person-environment system view that assumes that individuals function context-dependently (see chapter 2). The approach has implications for the generalization of results. The results in terms of possible operating factors of human functioning in *one* context cannot be generalized to other contexts without careful considerations and replications. The holistic, interactionist view on human functioning implies that it is the total person-environment system that needs to be considered. Multiple programs and initiatives should be integrated in order for the person-context system to be adequately employed.

8.5 IMPLICATIONS FOR PRACTITIONERS AND ORGANIZATIONS

In order to seriously support and develop work environments that allow healthy adjustments between man and new technology, more research of holistic character is essential. Moreover, the knowledge obtained from these kinds of studies should result in holistic policies regarding human work conditions as well. As a consequence, suggestions of practical character with regard to some of the findings in the present thesis work are addressed.

The results of the present studies support Social cognitive theory and earlier research, which suggest that efficacy beliefs are important to work performance in general, as well as to computer- and IT-usage. The results imply that individual differences in self-efficacy should be seriously considered in computer- and IT-related work tasks. The question is how and when computer and IT-related self-efficacy should be stimulated and strengthened in order to avoid threats to the present self-efficacy level of an individual. According to Bandura, the best advice is to use modeling and continuous feedback on capability to increase levels of self-efficacy. In information retrieval by means of electronic search, for instance, guided exploration via instructor modeling appears to enhance stronger self-efficacy than self-exploratory strategy.

Another important aspect to consider is to offer continued computer/IT training to employees. As the results from the thesis show, there is a relationship between IT/computer skill, IT/computer experience, computer education, and efficacy beliefs. This might indicate that the longer the experience with computers and various IT applications and the more education, the higher the self-efficacy in handling computer and IT-related work tasks. The level of self-efficacy might also influence IT skill and education, since it can be assumed that individuals with high efficacy beliefs in handling IT are interested in the development of their skills.

8.6 CONCLUSION

Two main conclusions of the thesis should be drawn. *First*, the rapid IT-development during the recent decade has changed work conditions for journalists mainly in a structural way. IT makes it possible to perform work in a more efficient manner. IT has also a large impact on communication patterns.

Secondly, and maybe most important, the present results partly contradict the rather optimistic and positive contemporary view of IT's influence on work conditions and organizational life. Of course, IT has not, and probably will not, substitute all parts of human interaction at work. IT is a work tool among others, although surely one with a great impact on both society and work. Nevertheless, working life requires face-to-face meetings and interaction between people in order to fulfill the essential of human functioning and social needs. As we could see from the present studies, journalists have not replaced face-to-face meetings with IT in all tasks of journalistic work

In the long run we probably gain by a considering both social and psychological effects of integration of IT-tools and new technologies in society. Conscious IT-policies, including a holistic view on human-machine interaction, might promote a more healthy work environment than we have experienced in Sweden in recent years.

8.7 CONTRIBUTION

The contributions of the studies are several.

- A broadened knowledge about how both perceived individual abilities and perceived environmental context influence IT-related work in journalistic work settings.

- A possible expansion of and contribution to research on Social cognitive theory. The thesis might contribute knowledge about the mechanisms of self-efficacy in IT-related work and about the development of IT-specific efficacy constructs, in line with the theoretical basis as suggested by Bandura. As was pointed out, research on the role of efficacy beliefs regarding information technology usage at work is scarce. However, it should be noted that while the present studies were being performed, some studies of the relationship between efficacy beliefs and IT-usage were published (see for example Debowski, Wood and Bandura, 2001).
- A clarification of the connection between IT-related work and creativity. Knowledge about these relationships may establish if IT-usage is perceived to prevent or/and support creativity performance at work.
- Recognition of the qualities of information technologies as tools for support of the development of professional competence and how the immediate context may influence human-computer interaction.
- Further, the knowledge gained from the thesis project may provide managers with information in terms of how to increase individual creative work performances by means of ultimate organizational support, by creating a stimulating creative climate, and through conductive support of individual beliefs in information technological capability.

8.8 FUTURE RESEARCH

In order to get a more comprehensive picture of the role of human self-regulatory functioning in IT-work and performance, more studies are needed. Only journalists were studied in the present thesis work, why replications of the studies in other professions and work environments would be of value.

It is also desirable to study the mechanisms involved in, and effects of, self-efficacy by comparing studies based on competing theoretical bases such as Social cognitive theory and Perceptual control theory. Some contributions have already been made (cf. Vancouver, Thompson, Tischner, & Putka, 2002), albeit not regarding IT-applications commonly used for work tasks. Because of the complexity of the mechanisms behind human performance at work, rival theories can give alternative explanations and therefore a substantial contribution to the understanding of the effect of self-regulatory phenomena on performance.

Since some data indicate that the positive relationship between self-efficacy and performance may depend on the cross-sectional design of the studies, a

longitudinal design with repeated measures might be valuable. Furthermore, according to the theoretical framework of self-efficacy, the claim that efficacy beliefs may vary over time and with tasks is a strong argument for measures across time.

9. APPENDIX

9.1. APPENDIX A – THE JOURNALISTIC PROFESSION

9.1.1 Parallel publishing and the multimedia news reporter

The *media company* is a new kind of newspaper company that will and in some cases has replaced the conventional ones. Due to the development towards parallel publishing- on the Internet, via *text-TV* or fax, the old news company is obsolete (Enlund & Lindskog, 2000). The traditional organizational model of newspaper companies has, during a long period in history, been based on two principles: the specific professional role of the journalist, quite far from other departments of the newspaper office; a strict division between the responsibility for economic resources and responsibility for the written word. The traditional organization model for newspaper business is illustrated in Figure 1a.

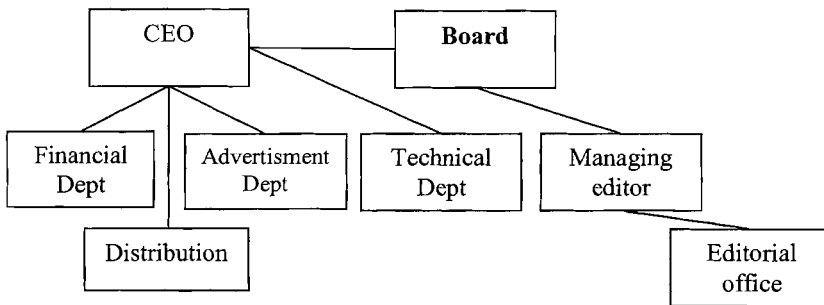


Figure. 1a. Organizational model for newspaper companies. After Alström, 2000, p. 34.

New technologies supported scanning of pictures, handling of advertising, editorial tasks, and made integration between different departments possible. A new organizational structure that developed towards a function-governed organization was also necessary. However, the development from the newspaper as a product through the media company seems to develop towards a *content company*. The focus of the content company is to gather and analyze information as an independent and trustworthy supplier.

Alström suggests that parallel publishing require a new organization structure developed from and dependent of the function-governed organizational model, see Figure 1b.

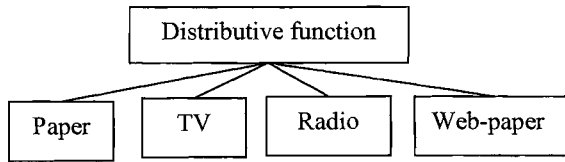


Figure 1b. Organizational structure for parallel publishing. After Alström, 2000, p. 37.

The new way of publishing in parallel channels implies that the same material will be cultivated in order to suit different channels. Several critical factors will contribute to successful editorial news work:

- New work tools. Multimedia databases will be developed.
- New competencies towards multimedia journalistic work.
- New job sharing and work rhythm. Instead of working against certain steady deadlines, the editorial work must be done with a continuous going to press.
- A wider divergence in journalistic material.

9.1.2 The journalistic work process

The development towards a media company will require changes at the organizational level and in work processes. Certain aspects of new information technology are assumed to be especially in focus, as the interactivity. Parallel publishing will influence work tools, work tasks, and editorial processes. Traditional work roles will be influenced in terms of direction and competence qualifications. The multimedia newspaper requires that the journalist increase the technical skill and get knowledge about multimedia work. Of importance is an understanding of how text, picture, video, etc, can be used in different types of journalistic products. The risk with this new multimedia journalism is, according to Enlund & Lindskog, that journalistic products may be lower in quality, due to the fact that the reporter writes for a variety of different publishing channels.

The development towards a multimedia journalistic work role may also result in a broader variety of work roles at the editorial news offices. Earlier, much of

journalism was performed via mail; reporters corresponded with their readers, the news offices and with their sources. The interview via face-to-face meetings and telephone has been the primary ways of collecting information with the purpose of producing articles. E-mail is a new technique for journalists and may be a valuable tool in several ways (cf. Reddick & King, 1997). It is possible to contact sources, to interview experts, and to clarify information by e-mail. Since the journalist often puts his/her e-mail address available at the end of the article, it is easy for the reader to interact and correspond with reporters. Reddick & King suggest three different ways that e-mail can support journalistic work. First, e-mail can enhance the interaction the journalist has with his/her sources, second it can be a channel for readers to suggest ideas to reporters and third, e-mail correspondence can be considered as public record, giving the journalist access to government information. Professionals in media occupations tend to be among the most frequent Internet users (Ahlsén, Segerberg, Svärd, & Wingstedt, 1996).

Journalists use Internet to a high degree for information search and publishing purposes. Although traditional journalist skills, like for example clear and incisive writing, will still continue to be important, new information professionals will also gather much of their information from computerized databases. They will also spend more time interviewing people in order to find information, rather than using them as information sources (Entman, 1997). Enlund & Lindskog claim that newspaper companies must realize several changes much more rapidly than what is done today. In an historical perspective, resources intended for competence development of staff, for recruitment of strategic leaders and for product development have been meager in news companies compared with other knowledge organizations.

9.1.3 Attitudes towards IT among journalists

Professionals who are dependent on quick and relevant information are especially affected by changes in information media. Journalists at daily newspapers are such a group of professionals whose occupational role and work are affected by the progress of information technology. Some previous studies indicate that the journalist's traditional role as the 'gatekeeper', the guardian who selects which news are appropriate and important enough to deliver to the reader is still current, albeit in a revised form (Singer, 1997; 1998). However, some suggest quite the opposite, namely that the gatekeeper is missing on the Internet since the net contains both trash and valuable information (Thurén, 2000). Can attitudes be helpful in explaining media professionals' beliefs and knowledge of interactive media? Singer, using a combination of case studies and Q methodology, investigated journalists' attitudes towards how technological changes affect their work and occupation. The purpose of Singer's studies was

to investigate the differences and similarities between traditional and on-line journalism and also how the interactive medium has affected what journalists actually do.

Singer argues that:

“The traditional receivers are not the only ones profoundly affected by this change. The traditional senders of media messages -- the journalists -- are faced not just with a new delivery method but with what may be a fundamental shift in their role in the communication process” (Singer, 1998, p.2).

Singer's studies indicate that few journalists view the new technology as having a fundamental effect on their job of making meaningful stories. For these journalists, the content of the story is the same no matter how it reaches the reader. Singer also proposes that such a view might be inadequate in meeting the challenges of new expanding information. News work is vulnerable to technological changes by the spread of on-line technology and media, according to Singer. Journalists have reported feeling isolated from their audience, either by tradition, choice or circumstances such as odd working hours (Burgoon et al., 1987). The question raised by Singer is how the interactive nature of on-line media may affect this isolation. One of Singer's suggestions for future research is to conceptualize journalists' jobs and roles within their professional society. Singer's study of American journalists' (e.g. reporters and editors) attitudes towards on-line media identified three different attitudes regarding Internet. One group had a rather enthusiastic view of on-line media, evaluating technological progress as opportunities. A second group feared new technology was connected with more drawbacks than opportunities. A third group predicted no big influences on the journalistic role, product or progress. Journalists may need to develop both their minds and technological skills in order to be able to use new forms of information. The mission of the journalist is not just a matter of information delivery; its essence is more concerned with the interpretation and processing of information.

9.1.4 Information mediating journalists

Journalistic work has changed radically during the last decades. Converging technology affects the editors' work, and reporters will be working by distance.

Although electronic sources and databases are common information sources today, the development steadily progresses with increasing amounts of information. Some suggest that the journalistic profession might evolve towards an information-mediating business. One problem that might increase is the possibility of source control. The claim is that the traditional power of

journalists will decrease since new forms of media corporations will gain ground and probably control the technology as well.

9.1.5 Journalism in the future

Alström, Enlund, Hedman, and Hvitfelt (2001) suggest a changing scenario regarding future journalism and media:

- The genres will break up. The limits between different types of genres will be unclear and will affect how journalism will be defined. Traditional demand for objectivity will have less importance. Entertainment, fiction and journalism will converge.
- The paper version of the daily newspaper is threatened. The remaining newspapers will be more specialized in terms of content and target audience, which might affect public opinion as to the role of media.

The news genre will diminish in importance. Fewer daily newspapers and more or shorter TV-produced news with fewer resources will affect the traditional role of newspapers.

9.2 APPENDIX B. THE MEASUREMENT INSTRUMENTS.

9.2.1 Work related IT-usage

IT-communication work outcome. The construct is adapted from Klebe Trevino & Webster (1992) and adjusted to the present study. The measure consists of two scales measuring the impact of technology on communication effectiveness in general and on the quantity of communication. Cronbach's alpha for communication effectiveness was .87, and for impact on quantity of communication .86. The scale consists of 15 items with seven possible responses ranging from (-3) decreased a lot to (3) increased a lot.

Solving challenging work problems. The questions ask respondents to think about how they last solved a really difficult work problem and to rate how helpful different information sources were in solving work-related problems: 1) scanning or reading of externally printed materials (journals, books, reports, CDs, etc.), 2) Internet company pages, 3) Internet discussion forum or communities, 4) private e-mail lists, 5) e-mail discussions, 6) informal telephone discussions, 7) informal face-to-face meetings, 8) scheduled meetings, 9) individual thinking, and 10) other. All questions are adapted from Teigland & Birkinshaw (1999). ($\alpha = .76$)

Internal electronic media usage. This measure is influenced by Teigland (1999) and was adjusted to the present study. Alpha was .78. Respondents were asked how often they use the following information channels at work: (1) company's intranet (2) company databases (3) electronic phonebook (4) company documents and reports (5) company discussion forums, bulletin boards, electronic communities, etc. (6) e-mail (7) phone and (8) fax.

External electronic media usage. The measure is influenced by Teigland (1999) and asks the respondents how many times a week they use the following communication forums with others outside their organization: (1) Internet (2) electronic communities (3) private e-mail lists (4) e-mail, (5) phone (6) fax. Alpha was .85.

General Internet usage at work. Adapted from Truedsson & Sjöberg (2000). The respondents were asked how often they use Internet at work (questions ranging from *not at all* to *more than four hours a day*).

General intranet usage at work. Adapted from Truedsson & Sjöberg (2000). The respondents were asked how often they use intranet at work (questions ranging from *not at all* to *more than four hours a day*).

General e-mail usage at work. Adapted from Truedsson & Sjöberg (2000). The respondents were asked how often they use e-mail at work (questions ranging from *not at all* to *more than four hours a day*).

Number of years of Internet usage, intranet usage and e-mail usage at work. The three scales were adapted from Truedsson & Sjöberg (2000). The items ranged from 0 to 3 on a 4-point scale.

Communication at work. The instrument developed by Bälter (1998) consists of three subscales that measure in what manner and how frequently the respondent uses various forms of communication channels for different purposes. Alpha was .88. All subscales are ranging from (0) *never* to (7) *several times per day*. Part A measures to what degree the respondent uses the communication channels when receiving work tasks consists of five items with an alpha of .69. Part B measures to what degree the respondent uses the communication forms when receiving information. The scale consists of five items with an alpha of .93. Part C includes five items that measure to what degree the respondent uses communication channels for the distribution of information. In the present studies, the scale was used as a summarized index of communication at work. Alpha was .82.

Perceived creativity. The scale that measured self-perceived creativity was originally developed by Sjöberg & Lind (1994) and validated in later studies by Björklund (2001). Of the original scale, 14 items were used in the present study. Two items that independently measured Internet and intranet as helpful creativity sources were developed and included in the questionnaire. The final scale included 16 statements in the form of a 5-point Likert scale ranging from “yes, it is absolutely correct” to “no, that is incorrect”. The items were validated further through a principal component analysis resulting in a two-factor solution. The variance explained was 40.9 percent. The two factors are:

(1) Spontaneous creativity. *Examples of items included are “The important thing at my work is intuition” and “My environment thinks that I’m very creative”* ($\alpha = .65$).

(2) *Creativity inhibition.* Example of items are “My work tasks can best be solved by well-known routines” and “When I see a problem it takes a long time to solve it” ($\alpha = .30$). The low alpha value suggests a low internal consistency among the indicators of the construct. Although exploratory research allows a lower degree of alpha, an internal consistency of .30 indicates that the indices do not have an acceptable fit of a single-factor (unidimensionality). Nevertheless, a low reliability does not exclude the existence of validity.

A scale adapted from Torkzadeh (1999) measured general attitude towards computers. The two questions were worded as follows: *I feel I have a positive*

attitude towards computers, and I feel that computers are helpful and useful. The questions employ a five-point response formatted scale from (1) strongly disagree to (5) strongly agree. Alpha was .65.

Specific attitudes towards IT-usage at work. Attitudes towards IT-usage at work were measured by a scale developed for the present study and inspired by Fishbein & Ajzen (1975) and Klebe Trevino & Webster (1992). The composite scale consisted of 20 items on a seven-point scale with two extreme points (statements with answers ranging from *extremely bad* to *extremely good* and a neutral point (*neither good nor bad*). A factor analysis with oblimin rotation was performed and the total variance explained from the three-factor solution was 47.2 percent. The factors extracted are the following:

- (1) Attitude towards IT as a communication tool.
 - (2) Attitude towards IT as something that enhances stress and information overload.
 - (3) Attitude towards IT as a tool for competence development and cooperation.
- Analyses of internal consistency revealed a Cronbach's alpha of .73.

General attitude towards Internet usage, intranet usage, and e-mail usage at work. The respondents were asked, through three direct questions, to rate their attitude towards the use of Internet at work, towards e-mail use at work, and towards intranet use at work. All three questions were adapted from Truedsson & Sjöberg (2000).

General work self-efficacy (GSE). Schwarzer (1993) originally developed the scale, which was translated into Swedish, and validated by Källmén (2000). The scale was modified for the present study. The 10 questions, ranging on a 4-point scale, measure to what extent the respondents feel confident regarding handling different circumstances at work. Alpha was .89.

Computer self-efficacy (CSE). The scale is adapted from Compeau & Higgins (1995) and Compeau, Higgins, & Huff (1999) and was adjusted for the present study. The scale consists of 9 items on a 10-point scale that ask respondents to describe their confidence in using the computer. The questions range from (1) "not at all confident" to (10) "totally confident." Alpha was .93.

Internet self-efficacy (ITSE). The instrument is based on the Computer Self-efficacy Scale (Compeau & Higgins, 1995; Compeau, Higgins, & Huff, 1999) and was developed for the present study. The scale includes 4 items on a 10-point scale that ask the respondents to describe their confidence in using Internet at work ($\alpha = .91$).

Intranet self-efficacy (INSE). The instrument is based on the Computer Self-efficacy Scale (Compeau & Higgins, 1995; Compeau, Higgins, & Huff, 1999) and was developed for the present study. The scale includes items on a 10-point scale that ask the respondents to describe their confidence in using intranet at work ($\alpha = .89$).

IT/computer experience was measured by a scale adapted from Truedsson & Sjöberg (2000) which consists of 12 questions that assess the respondents' experience of the use of computers, Internet, and e-mail. A question was added to the scale in order to measure the respondents' experience in intranet usage. Alpha was .85.

Computer skill was measured by questions adapted from Truedsson & Sjöberg, 2000. The scale consists of 6 items that ask respondents to describe their skill with computers on a 5-point graded scale with extreme points ranging from (-2) *very bad*, to (2) *very good*. Alpha was .79.

Interest in work was measured by an existing scale developed by Sjöberg & Lind (1994). It was modified and adjusted for the context of the present study and consists of 25 statements regarding journalistic work tasks. The items are in the form of a 7-point Likert scale rated from "absolutely uninteresting" to "interests me very strongly". The items were validated further through a principal component analysis. The variance explained was 47.9 percent. The three dimensions from the factor analysis are:

- (1) Interest in traditional journalistic work.
- (2) Interest in cooperation, contacts & individual development.
- (3) Interest in technological interview methods.

Creative efficacy. The scale is based on the work by Bandura (1977) and was developed by Tierny (1997). The items reflect efficacy perceptions related specifically to being creative in one's work. The items were translated into Swedish and tested by a focus group. The 3 items are worded as follows: "I feel that I am good at generating novel ideas", "I have confidence in my ability to solve problems creatively" and "I have a skill for developing other peoples ideas" ($\alpha = .82$).

9.3. APPENDIX C. INTERVIEW GUIDE. STUDY 1.

Working place and work

1. What is characteristic of the working place?
2. One's own work
3. What does an ordinary working day look like?
4. How do you communicate with others in your work?

Electronic media in the work place

5. What electronic media are you working with?
6. Are electronic media used in collaboration with others?
7. How is electronic media used in collaboration with others?
8. Possible restrictions with electronic media in one's own work?
9. Possible restrictions with electronic media in collaboration with others?
10. How would you describe the Internet to someone who never used it?
11. How would you describe the Intranet to someone who never used it?
12. What is the difference between the Intranet and the Internet?

Competence development and learning

13. When did you use the Internet for the first time?
14. How did you learn to use the Internet?
15. What type of information do you look for on the Internet?
16. How do you use the information you find on the Internet?
17. Describe a typical work situation in which you make good use of the Internet?
18. How do you inform others via the Internet?
19. What does that information consist of?
20. Do others give you a tip on how to find information on the Internet?
21. Do you give others a tip on how to find information on the Internet?
22. Do you make new work contacts via the Internet?

Journalism, the Net and the future

23. In your view, how has the Internet influenced the journalist's work?
24. Can the Internet be used to improve your own professional competence?
25. How?
26. In your view, how can the future journalist use the Internet?
27. Does today's journalist need any specific knowledge in order to make use of the Internet in his/her work?
28. How can the journalist's competence with regard to the Internet be improved?
29. Which are the Internet's greatest advantages to the journalist?
30. Which are the Internet's disadvantages to the journalist?
31. Can all journalists make use of the Internet?

32. Can cooperation between journalists change because of the Internet?
33. How?
34. Does the journalist's use of the Internet differ from that of other professional groups?
35. Can the (journalist's) use of the Internet influence the media debate?

9.4 APPENDIX D. INTERVIEW GUIDE. STUDY 4.

- Give an example of a creative idea, process, product or a creative person that you specially remember from your working life as a journalist. You yourself decide what is “creative”. The example does not have to be taken from your current place of work and it does not need to involve you personally (although, of course, it can).
- General advice for the interview: Tell everything you can to describe the specific event you are thinking of. Describe the event and those factors contributing to creativity. What is the difference between this event and more non-creative events?
- During the interview focus on what the creative idea, process or product consisted of. Try to avoid too technical terms and private information.
 - How was the environment?
 - What factors in the work situation contributed to creativity at this event?
 - Describe the capability and the most salient qualities in those persons contributing to creativity.
 - Were any obstacles in the work environment overcome in connection with this event?
 - What preceded this (triggering factors)? Was there a problem, new resources, possibilities, etc.?
- Also, think of something that has been negative or disappointing in terms of creativity during your working life. It could involve a creative idea or product. What is the difference between this event and other more creative events?
- According to you, is there anything in the journalistic profession that can specifically facilitate creative achievements?
- What has information technology (e-mail, the Internet, the Intranet) meant to your journalistic creativity and/or that of others? Is IT an obstacle or a support to creative work?
- In my earlier study of IT use & creativity among journalists I found that factors such as
 - * length of experience of e-mail use,
 - * frequency of Internet use for work,
 - * interest in cooperation, contacts and personal development

and

- * degree of trust in one's own IT competence

are related to a high degree of self-perceived creativity. In your view, do the above factors play a role for creativity? In that case, why?

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