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Interactive Media in Swedish Organisations

In-house Production and Purchase of Internet and Multimedia Solutions in Swedish Firms and Government Agencies

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Foreword

This report on *Interactive Media in Swedish Organisations. In-house Production and Purchase of Internet and Multimedia Solutions in Swedish Firms and Government Agencies* is a follow-up to our previous study of Internet and multimedia producers, *Interactive Media in Sweden 2001. The Second Interactive Media, Internet and Multimedia Industry Survey*, published in the Work Life in Transition research report series. While the previous study focussed on specialised firms that produce interactive media for external customers, the present study focuses on the in-house interactive media operations among large Swedish companies and government agencies in general.

The present study, like the preceding one, has been carried out within the MITIOR programme which is an acronym for *Media, IT and Innovation in Organisation and Work*. This programme is located at the Work and Health Department of the NIWL/Arbetslivsinstitutet and at KTH, the Royal Institute of Technology, in Stockholm. At KTH it is part of the department NADA, Numerical analysis and computer science and its Centre for user-oriented IT design, CID. The study was financed by the NIWL and in part by Vinnova, the Swedish Agency for Innovation Systems. Our industry partner was Svenska IT-företagens organisation (the Swedish IT and telecom industry), with Peter Medlund as a devoted contact person.

The study has been conducted by professor Åke Sandberg and Fredrik Augustsson, doctoral student, in cooperation with other members of the MITIOR programme, research assistants Tommy Lindkvist and Emma Movitz.

Our present studies of IT and media are part of an ongoing interest in technological developments, changing management ideas, organisational transformations, the emergence of new industries and their role in a changing working life (see e.g. Augustsson and Sandberg 2003a; 2003b; Sandberg 2003). Thus, the present survey about the organisation and production of interactive media solutions, directed at managers of a sample of the largest Swedish firms and government agencies, is an integrated part of the broader MITIOR programme.

We are currently finishing a report on the results of a survey directed at individual workers within the interactive media industry, linked to our prior company survey. A study of ICT companies in Kista Science City in northern Stockholm has just been published in Swedish and an English report or article will follow. Other theoretical and analytical projects within the MITIOR programme include a study of the organisation of interactive media production (Augustsson's forthcoming dissertation), a reader with critical perspectives on new forms of management and work, *Ledning för Alla?* (SNS 2003) and thematic conference papers, articles and book chapters about geographical

aspects (Sandberg 1999), competence development (Augustsson and Sandberg 2004) and visual analysis (Augustsson 2003a).

This study could not have been carried out without the support of a number of colleagues, co-workers, friends and understanding family members. Thanks all. With no doubt the most important here are the representatives of management in the 371 organisations who took the time to fill out the questionnaire; without them there would be no results to report. We hope they will find it worthwhile.

We would like to give special acknowledgement to those who contributed to vital, practical issues involved in empirical research. First of all to Tommy Lindkvist, who contributed substantially to updating and modifying the questionnaire, locating organisations and administering the distribution and replies to questionnaires. Our thanks to consultants UC and ActionData who assisted with company databases and the coding of replies respectively. Emma Movitz assisted with the construction and layout of the many figures and tables in the report. We thank Atty Burke for correcting our written English. We also thank the knowledgeable and helpful administrative personnel at NIWL, especially the institute's librarians, our skillful IT support group, the printing department, and Inger Franzén and others who helped administering our survey.

We would also like to thank the researchers and practitioners who gave us the opportunity to build upon their studies when constructing our survey and helped us improve earlier draft versions of the questionnaire: Susan Christopherson, Cornell University, Carl le Grand and Ryszard Szulkin, Stockholm University, Peter Leisink, Utrecht University, and Gunnar Aronsson, Casten von Otter and Anders Wikman at NIWL. Our thanks to Klas Levinsson for letting us use the data from his study on co-determination (Levinsson 2004) for our own analyses. Among practitioners the late Peter Medlund of IT-företagen and Henrik Lindborg, webmaster at NIWL, contributed with their experience and expertise.

The preparations for this research, and the analysis of the results, were greatly improved by the response we received from researchers and especially practitioners when we presented the results from a previous study at a seminar co-organised by ESBRI at a Stockholm TIME (Telecom, IT, Media & Entertainment) week, a second seminar organised by Magnus Drougge at GF Mediafacket (Graphic-Media Workers' Union) co-sponsored by Sif, and a third with members of the trade organisation Promise (Producers of interactive media in Sweden). As usual, we take full responsibility for the results presented here. This report is available in print and as pdf-file at www.Arbetslivsinstitutet.se.

Stockholm August 2004

Åke Sandberg
Professor

Contents

List of Figures and Tables[1]

[1] The 62 tables presented in the Table Appendix are not listed here.

Some Results in Brief

- 40 per cent of larger Swedish companies and government agencies handle all or parts of their own interactive media production internally. At least another 37 per cent purchase such solutions from other companies.
- Organisations that produce interactive media internally have on average ten employees (a median of three) involved in their interactive media activity and those that purchase solutions have two employees on average (a median of one). The total number of in-house employees that produce and purchase interactive media solutions is estimated to be more than 7,100 and including purchasing staff more than 11,600.
- Organisations that produce interactive media on average started their use and production in 1996 and those that only purchase such solutions started in 1997. This is roughly the same time that specialised interactive media companies started their production.
- In-house interactive media operations have grown steadily since 1996, but managers estimate it will stabilise during 2002.
- On average, organisations subcontracted production for 1.83 MSEK and purchased for another 1.75 MSEK in 2001. The total amount ordered externally in 2001 was 1,875 MSEK and was estimated to grow by five per cent to 1,976 MSEK in 2002.
- Average salaries for in-house interactive media employees are slightly higher than for employees within specialised companies, and internal wage differences are lower.
- The average age of in-house interactive media employees is higher than for workers in specialised firms.
- In-house employees are offered smaller resources for competence development than workers in specialised interactive media firms. Managers in more than one third of organisations do not know the proportion of employees that use offers for competence development fully. One reason is that a large proportion of organisations lack a strategy to measure and secure competence development.
- Female workers account for 43 per cent of interactive media employees and 39 per cent of organisations have a woman as manager responsible for interactive media operations. This is far more than in specialised interactive media firms where women account for 18 per cent of workers, and less than 14 per cent of firms have a women as highest-ranking manager (i.e. in charge of interactive media operations).

1. Introduction

Interactive media production has a short history as a widespread economic activity. Although computer games, company presentations and other multimedia productions have been developed for quite some time (Fjellman and Sjögren 2000; Kent 2001; SIKA 2003; King and Borland 2003), it was not until the wider spread of the Internet and intranets in the mid 1990s that interactive media became a major concern for organisations in general. It then took only a few years until the vast majority of Swedish firms, voluntary organisations and government agencies used interactive media solutions. According to a recent survey by Statistics Sweden (SCB 2003), almost 100 per cent of Swedish firms use interactive media solutions and four out of five have their own website (which is just one example of an interactive media solution). Today, Internet-based solutions are key components in the co-ordination of purchase, production and sales in chains and networks of producers and to a growing extent also in sales and service relations to end consumers and users.

In two previous studies, (Sandberg 1998; Sandberg and Augustsson 2002), we investigated the production of interactive media solutions that specialised companies, often called web consultants, produce for external customers. The results portrayed a young and dynamic industry in terms of growth, closures, acquisitions and mergers where institutional settings such as employment contracts, competence development, levels of collective agreements, unionisation, etc. were still in the making. In many ways, it differed from conditions in the traditional working life in general. Working life outside the interactive media sector is not homogenous though, and there are similarities between interactive media production and other sectors such as media and culture work (Sanne 2001).

While the previous studies dealt with a part of what has been labelled 'the new economy', the focus of this study is on the role of interactive media in the possible transformation of the 'old economy' (cf. Augustsson and Sandberg 2003a). Much of the fame and glory of interactive media production companies has faded due to the infamous 'dotcom-death' (Lennstrand 2001; Petterson and Leigard 2002). However another less written about process has simultaneously occurred: a large number of firms and government agencies in the 'old economy' have built up their own interactive media and Internet operations internally to supply internal, and sometimes also external, demand for these kinds of solutions. This report focuses on these organisations and their interactive media operations. The purpose is to investigate the general picture of the production, subcontracting, maintenance and purchase of interactive media solutions within Swedish firms and government agencies. Thus, the organisations studied here are not 'simply' the customers and consumers of interactive media solutions, but in many cases also the developers and producers of the solutions they use. As will be shown, some may have interactive media operations of significant scale and scope.

The report is based on a questionnaire completed by representatives of the management of 370 Swedish companies and government agencies during the winter of 2001-2002 (the IMSO-2002 survey). The questionnaire used, as well as the general research process, is based on experiences we have gained from our previous surveys in 1997 (Sandberg 1998) and 2001 (Sandberg and Augustsson 2002), referred to respectively as the NM-1997 and IM-2001 surveys. However the questionnaires have been extensively modified and improved to fit the object of this study. A detailed description of the design of the study can be found at the end of this report. It could be useful to read this description before turning to the findings, although an overview is given at the beginning of the next section.

The report is mainly descriptive, as it is the first report from our exploratory study. To our knowledge, there is no prior quantitative knowledge of the in-house production, purchase and use of interactive media solutions among Swedish organisations (or internationally for that matter). Later, more analytical and theory-related reports and articles will follow. Based mainly on our IM-2001 study, a few articles focusing on specific topics have already been published[2]. Where relevant, comparisons are made with the 2001 study directed at companies that produce interactive media solutions for external customers. In a few cases we have also included comparisons with the 1997 new media survey. These comparisons are intended to highlight the ways interactive media production differs between organisational settings, as well as over time. The purpose is essentially to investigate how in-house interactive media operations are organised, including relations with other companies, and in what ways they differ from the situation in specialised interactive media production companies. Based on the comparisons and other findings, we offer some preliminary hypotheses and possible conclusions.

The impact of new technologies and products is compared to the institutional and organisational context in order to understand the organisation of production and work, as well as its consequences for employees (compare Liker et al 1999). Is in-house interactive media production organised similarly to specialised interactive media firms, to the various organisations that host the interactive media production, or to other similar kinds of practices?

The discussion is relevant not only for the present study, but also for trans-formations of working life in general: are possible changes due to the emergence of new populations of organisations, new technologies, new management ideologies (and other institutional transformations), and/or new activities (compare Augustsson and Sandberg 2003b)? Answers to questions like this have consequences for policy related activities aimed at increasing possibilities of securing good jobs in productive companies. When formulated in this way, the connections between this report and the overall purpose of the MITIOR programme should become clear.

[2] See e.g. Augustsson (2004a), Augustsson and Sandberg (2003a, 2003b, 2004), Darin (2003).

Outline

The next chapter gives an overview of the research area and its inclusive components: organisations; interactive media solutions; and the organisation of their production.

This is followed in chapter three by a brief note on the research design and methods, aimed to give an introductory understanding of how the data was collected and analysed as well as the inherent limitations of the material. A fuller and more technical description is presented in chapter fifteen.

Chapters four to thirteen contain the bulk of the empirical results in the report. First we look at the history and size of Swedish interactive media production. Here, it is shown that in-house production of interactive media solutions began almost as early as specialised interactive media firms started and has a size equivalent to, and perhaps even larger than that of specialised firms.

Chapter five presents results on the organisation of in-house interactive media production. This includes findings on how interactive media is organised, who participates, and what they do. Results are presented on what organisations choose to outsource and subcontract and to whom they turn for this.

Strategies for subcontracting and purchasing interactive media are examined in chapter six. We describe the number of other firms contacted, how organisations contact them, the stability of relations to other companies, the relative dependence between the actors and the geographical location of partners in production networks.

In the seventh chapter, we present information on managements' view of the relative importance of different factors explaining why some organisations choose to produce all of their interactive media solutions, why others choose to handle certain parts themselves and subcontract the rest, and why yet other organisations choose to purchase everything.

Chapter eight concerns organisations' satisfaction with the interactive media solutions they have purchased, as well as with their suppliers.

The following chapter looks at changes in organisation's overall interactive media operations over time. Of particular relevance here is whether organisations intend to decrease or increase their internal operations and if there is a movement from specialised firms to in-house production of interactive media, so called in sourcing.

Chapter ten focuses on the employees working with interactive media production and purchase within the organisations. We describe the number of employees in average organisations, their working tasks, age and gender composition and the proportion of temporary and fixed time employees.

Matters of competence and competence development are discussed in chapter eleven. We present competence levels for employees and managements' views on the relative importance of different competencies. We report on resources for competence development, actual levels and strategies to secure competence development for.

Results regarding issues of salaries and different reward systems are reported in chapter twelve. We find that average salary levels for in-house workers are somewhat higher than for employees in specialised interactive media firms and that wage gaps are slightly smaller.

Chapter thirteen concerns the work environment, health care and union agreements. Results are reported on average weekly working hours, forms of compensation, absenteeism and health programmes, and union agreements.

The empirical results are summarised in chapter fourteen, which also contains a concluding discussion on the extent of interactive media in Swedish organisations in general, and its differences from and similarities with specialised interactive media companies.

A detailed description of the design of the study is presented in chapter fifteen.

2. The Impact of Interactive Media in Swedish Organisations

We have earlier (Sandberg and Augustsson 2002; Augustsson 2002a) stated that interactive media production cannot be understood as a traditional industry, sector or branch, even if we ourselves sometimes use these words here and elsewhere for matters of simplicity. Instead, interactive media production is a practice performed both by newly started companies focusing solely on producing interactive media for external customers, older companies with a long tradition from related areas (traditional media, advertising, graphics production, consulting, etc.) who offer interactive media solutions as one of several services, and organisations in any sector that produce their own interactive media solutions internally, either in full or parts of it. Here, we investigate the latter type of organisational setting for interactive media production. Even when just looking at organisations' in-house interactive media operations, there are still different organisational solutions and degrees of involvement. Whether organisations produce interactive media in-house is not black or white; i.e. something they simply do, or do not do. Below, we develop these issues in order to clarify differences and the interpretation of results.

Interactive Media Solutions

Although the production of interactive media has matured somewhat in the last few years, and technological changes seem to be less frequent (Augustsson and Sandberg 2004), there is still some confusion regarding what is actually meant by interactive media and how it relates to other technologies. This is especially so as similar concepts are used to denote different technologies and identical technologies are given different names. The definition of interactive media used in this study is equivalent to the one we have used earlier within the MITIOR programme. Thus, by interactive media we refer to digital solutions that integrate text, graphics, sound, vision and video (multimodal products), and allow users to interact with the solution. The platform or information carrier is on-line (Internet, intranets), off-line (CD-ROM, DVD, information kiosks, etc, or wireless (WAP, W-LAN, 3G, and so on). Examples of such solutions include websites, e-business and e-learning solutions, computer games, on-line banking and storage and logistics systems. Other names for similar technologies include new media, multimedia and digital media (Lievrouw and Livingstone 2002). The conceptual boarders to IT solutions in general, semi-standardised software, advertising and financial systems are not always clear, but empirically usually present less of a problem. Although it is difficult to develop a strict scientific classification of interactive media solutions, the vast majority of practitioners active within the field of interactive media production have little problem understanding what constitutes interactive media and what does not. This does not hold true to the same extent for all

people working with interactive media related tasks[3]. For most workers that use interactive media solutions as tools to perform their work, the precise definition is of little interest.

Interactive media is narrower than computerisation or information technology infrastructure and software in general. Thus, we do not include the production or use of standardised software solutions (such as operating systems), e-mail or organisations' Internet connections. A study of the impact of the latter areas in organisations would be much broader, and include a vast range of topics that have only limited relation to interactive media. It would be difficult to obtain any in-depth knowledge in such a general study as the area to cover is broader (SCB 2003). Overviews are useful to present general trends, but we argue that more focussed studies of limited areas of production provide in-depth knowledge that is crucial to understanding the actual impact on work and organisation.

Interactive media solutions can be intended for internal use only, or directed at customers or other actors outside the organisation, or a combination of both. Intranet solutions are, for instance, only intended for members of the organisation (and in some cases open to varying degrees, dependent on the status and function of different employees within the organisation). Financial services, such as on-line banking, are mainly intended for external customers who log on to perform some of the services traditionally handled by bank office clerks. Some firms also have logistic and storage solutions which link the internal production process of the firm to multiple suppliers and subcontractors in order to facilitate Just-In-Time production, as well as an integrated process of production and process development (Ward and Peppard 2002).

Organisations and Practices

The production of interactive media can be thought of as a practice involving a set of activities, such as programming, design and content development (Augustsson 2001; 2002a). Some activities are seen as central to interactive media production, i.e. they are an integrated part of the actual production process. Examples include graphic design, systems development, copy and content research. Other activities are mainly supportive of, or related to, interactive media. They are often necessary for the solution to work, but are generally not viewed as part of the production process. Examples here include web-hosting, physical manufacturing and distribution of CD-ROMs and DVDs[4]. In this study we have worked with a list of 15 central and seven supportive interactive media activities, excluding purchase and maintenance that is identical to the one in the IM-2001 study. In some cases, we use a broader classification of activities where we distinguish between IT/programming, design and content development, and project management. This roughly corresponds to the three inherent logics of the field: technology, aesthetics, and economy (Augustsson 2004). This makes it possible to get

[3] The methodological difficulties this presents in surveys are dealt with in the description of the design of the study in chapter fifteen.

[4] The separation between central and supportive functions is not given. It is socially constructed and dialectically related to the artefact and the organisation of production (cf. Augustsson 2002a).

a broader overview of, for instance, the relative scope of different interactive media tasks within organisations.

There are alternative ways of structurally organising the production of interactive media solutions and related operations. The practice of producing interactive media need not be limited to particular types of organisations and their inherent activities. Both the central and supportive activities, and the purchase and maintenance can be divided between several organisations. It is therefore wrong to think of interactive media solutions as something a certain organisation produces and sells on a market to a customer that 'only' buys and uses it (cf. Williamson 1985). Instead, interactive media production should be understood as a practice that organisations can be involved in to differing degrees. Some organisations produce all the interactive media solutions they use internally. Others produce parts of their own solutions, i.e. handle some of the activities internally, and subcontract or purchase other parts from outside companies. There are also of course organisations that have no in-house production at all and purchase all of their standardised or customised interactive media solutions from other companies.

Alternative structural solutions also apply to the purchase, updating and maintenance of interactive media solutions, i.e. some organisations do all of it internally while others outsource it. Thus, the IM-2001 study of interactive media producers and the present IMSO-2002 study of in-house interactive media production are focussed on the same practice, interactive media production, but in different organisational settings. The boundaries between the two areas, or organisational settings, are not clear-cut although they are sometimes treated as such here for statistical comparative reasons. Further, the two groups of organisations have long standing relations to each other, both in terms of production and ownership. The reality of economic activities is far from as tidy as formal presentations make them appear (Block 1990; Luhmann 1995; Sayer 1995; Augustsson 2001).

Interactive media production can also be organised differently *within* organisations, with more than one department being involved in its development. As will be shown, interactive media production is not necessarily organised as a separate department within organisations. In many cases, it takes the form of projects handled outside organisations' daily operations, or as a network of representatives from different departments. The choice to produce internally does not determine *how* it will be organised (Augustsson 2003).

The organisation of interactive media operations, both internally and between organisations, might of course change over time for different reasons. Interactive media activities that were previously handled by one department within the organisation might be handed over to another, a new department focussed only on interactive media operations might be created, or a network of people from different departments established. Organisations may start to do things internally which they did not do before (in-source), or they may stop certain things they did themselves and give them to other organisations (outsource) (Wikman 2001; 2003). Some organisations place all their interactive media operations in a separate fully or partly owned

company with the sole or main function of serving the parent organisation. This might occur through the purchase of a specialised interactive media producing firm or office, which happened when ABB bought Framfab's office in Västerås. Organisations can and do also change the external partners they work with in the development of interactive media solutions, as well as the types of relations they have with them. As organisations gain more knowledge of interactive media and require different and sometimes more advanced services, they may re-negotiate contracts or look for new partners to purchase from or collaborate with. Thus, the organisation of interactive media operations is dynamic, temporal and flexible, rather than static. Dynamics are partially due to the so far unsettled roles of different actors in the process of producing interactive media. Core competencies and combinations of activities are still under development and many organisations seem uncertain as to what the right mix consists of (Kay 1993; Augustsson 2002a). Although practices develop towards closure, stability and inertia as they mature (Parsons 1951/1991), there is always some degree of flexibility, and thereby uncertainty (Stinchcombe 1965; Luhmann 1995). It is therefore unlikely that we will find one (best) way of organising interactive media production in the future.

Alternative Relations to Interactive Media

Thus, interactive media production is a practice performed in different organisational settings that tend to change over time, and organisations have different kinds of involvement in interactive media operations. This complex situation is not restricted to interactive media. It resembles the dynamic situation in business life in general where organisations outsource practices, subcontract production and start to purchase goods and services formerly handled internally, thereby creating complex relations between organisations (cf. Coase 1992; Alter and Hage 1993; Hollingsworth and Boyer 1997; Christmansson and Nonås 2003; Wikman 2003). The current restructurings, including their causes and effects, are no doubt complex and difficult to comprehend. As a result, there is sometimes confusion regarding the terminology used to describe the changes. In this report, we aim to use a consistent terminology to describe the structural organisation of interactive media operations within and between organisations as well as changes over time, which is described below. The description may seem somewhat extensive, but it is necessary to clarify what our results are based on and refer to, as well as what the basis is for the comparisons we make.

Interactive Media Production

As argued above, the production of interactive media can take place in different organisational settings, i.e. in different types of organisations. In this report we make a distinction between two main types of organisations: *specialised interactive media firms* and *organisations in general*. Specialised interactive media firms refer to companies that produce interactive media solutions for external customers as a means of gaining revenue. Besides the production of interactive media solutions, these companies may be engaged in other areas of business, such as advertising or IT

consulting. Thus, being specialised in interactive media does not mean that this is a firm's sole or even major area of practice. Specialised interactive media producers are not the focus of this study, but they are repeatedly referred to and comparisons are made with them in order to analyse differences and similarities in the organisation of production. Using the data from the IM-2001 study (Sandberg and Augustsson 2002).

'Organisations in general' here refers to larger Swedish companies and government agencies that produce all or part of their interactive media solutions, purchase such solutions and/or use such solutions[5]. These organisations may be involved in any kind of activity, except the production of interactive media for external customers (as this would define them as a specialised interactive media producing firm). The organisation might have an interactive media solution only for internal use, such as an intranet solution. It may also have an Internet solution, like a web page, that allows outsiders to obtain information, make some kind of transaction, etc. In some cases, the solution makes it possible for different insiders and trusted outsiders to access and modify the same information and databases, thereby creating a form of virtual production network (Ward and Peppard 2002). What the organisations have in common, which is relevant for this study, is that they use some kind of interactive media solution and hence must find a way to secure the supply of such solutions, something that can be done in several ways.

In-house and Internal Production

To produce something or perform a practice in-house simply means that it is handled within the boundaries of the organisation, by employees of the organisation, sometimes aided by consultants (Augustsson 2000; 2001). In this study, in-house practices only refer to interactive media operations that organisations in general perform for their own use. Thus, although specialised interactive media producers perform identical practices internally, this is not viewed as in-house production – it is simply production (for external customers).

Outsourcing

Outsourcing refers to the process or situation where an organisation ceases to perform a certain practice and hands it over to one or more other organisations (Wikman 2003). This implies that the organisation has actually performed the practice before, but does not anymore, and that the organisation is still in some way dependent on the practice being performed. Thus, it is correct to say that an organisation has outsourced their interactive media production if they used to do it in-house, but have stopped doing so. It is not correct to say that an organisation is outsourcing its interactive media production unless it is doing so at that very moment or gradually shrinking its in-house production. The reason to make a distinction between outsourcing and subcontracting is related to the novelty of interactive media production and use and its alternative forms of organisation. Unlike two other types of organisation that grew rapidly during

[5] The study was initially also aimed at voluntary organisations, but they were left out of the analyses as we only received one answer from that kind of organisation (see below on data collection).

the 1990s (call centres and temporary staffing agencies), the emergence of firms specialising in interactive media production is not due to existent organisations outsourcing practices once performed internally. Interactive media production is a completely new practice that was not performed previously.

Even though practices are outsourced, the same people might still perform them within the physical premises of the organisation although the legal relation, based on the employment contract, has changed (Augustsson 2000). We refer to outsourcing here only when we have information that interactive media production was previously been performed within the organisation, but no longer is. Otherwise, it is defined as subcontracting or purchase.

Subcontracting

Subcontracting means that certain parts of a practice or production process are performed by one or more other organisations. When parts of a practice are subcontracted to another organisation, the original organisation is still involved in other parts of the process in some way. Further, responsibility for the complete end result is usually in the hands of the organisation that subcontract the practice. Subcontracting usually involves a relatively stable relation between the supplier organisation and the one who has subcontracted the practice. To a growing extent organisations are using a range of subcontractors who bid for specific contracts, often through interactive media based market solutions.

Differences between subcontracting and outsourcing are not always definite or easy to distinguish. Unlike the process of outsourcing, subcontracting does not mean that the 'parent' organisation has performed the practice internally earlier. Nor does it mean that the final solution is intended to be sold to a customer outside the 'parent' organisation or another third party. The difference between subcontracting and purchase is not always clear either. Subcontracting always includes a purchase, but not all purchases are here considered to be subcontracting. Subcontracting means that organisations receive something from an external actor that is an integrated part of their own operations.

Often specialised interactive media producers both have, and function as, subcontractors themselves (Sandberg and Augustsson 2002). This is, however, not dealt with at length in this report as it complicates the picture further[6]. Rather, focus is on the subcontractors of organisations in general in the production of interactive media.

Purchase

Both outsourcing and subcontracting mean that an organisation is purchasing goods or services from another organisation. However here, we refer to purchase only when an organisation does not have any in-house interactive media production *at all*, i.e. when complete solutions are purchased from specialised interactive media companies (or

[6] The issue is dealt with in Fredrik Augustsson's forthcoming dissertation.

someone else provides the same service)[7]. As interactive media solutions often require maintenance and modification, purchasing everything from specialised firms may still require a long-standing relation between two or more organisations.

The purchase of an interactive media solution is in itself a practice that necessitates work to be performed by the purchasing organisation. It is a process in which decisions must be made regarding what the solution should be used for, how it should be designed, from whom to purchase from and how to reduce uncertainty through contracts. Some organisations choose to involve external consultant expertise to articulate the interactive media needs of the organisation, search for available alternatives and evaluate offers. Thus, the division of activities involved in interactive media also includes the actual process of purchase. Interactive media solutions are becoming more important in the structuring of work (Stinchcombe 1990) and several studies have shown that user involvement in design leads to solutions that are more efficient and more frequently used, as well as offering better working conditions (cf. Augustsson and Sandberg 2003a). As such it is of great interest to investigate the actors who are actually engaged in the process of purchasing interactive media solutions or developing them internally.

Maintenance

Interactive media solutions require maintenance and repeated up-dates of content and technical hardware and software that is not part of the actual production of the solution. Unlike production, which is often organised in projects with clear points of start and finish, maintenance is a continuous process, although there might be quiet periods between the actual times when maintenance is performed. But as with the production of interactive media solutions, it is something organisations can either handle themselves or outsource.

The organisations' options for handling maintenance themselves are partially dependent on the competence they have relative to the complexity and design of the interactive media solution. Some solutions are specifically designed to make it easier for employees who lack technical competence to update the content themselves. As interactive media technologies, especially Internet publishing, mature and become more standardised, this is to a growing extent the case. Some organisations have granted employees other than those who are responsible for IT and interactive media the right to up-date certain web pages. Employees might, for instance, be able to update information about themselves on the organisations intranet and web page. It is important to separate this from actual maintenance, fault seeking, testing and correction of technical errors. Employees are usually only given access and have the knowledge to alter the content within the limits set up by administrators and the technology itself. Their possibilities to change the technology itself are highly limited.

[7] There is one example in our material where a government agency is not supplied with an interactive media solution from a specialised interactive media firm, but from a central national agency that it is legally separated from. This further illustrates how the same practice can be performed in different organisational settings and that matters of make or buy are highly complex.

Use

The use of interactive media solutions is 'furthest away' from the actual production of interactive media and usually requires no knowledge of either technical development or content design. Organisations and their members can use these solutions without knowing how they are made, or even by whom, or how to update and maintain them. This goes for other technologies as well, such as television sets, telephones and cars.

Use of interactive media solutions does not necessarily imply that the organisation has produced or purchased a solution that is tailored specifically to their needs. Employees might simply use the Internet or off-line interactive media programmes. In this report, we only study organisations that use an interactive media solution actually developed for them, even if it might be a modification of a standardised solution (like those made by SAP, IBM, Microsoft and others).

Organisation of Practices and Working Situations

One important reason to study interactive media production (and other operations that organisations handle in-house) is to gain a more complete picture of the extent to which it is practiced in Sweden, as well as a more thorough understanding of how it is organised within and between different organisations. From the discussion so far, it should be clear that a calculation of the extent of interactive media production based solely on specialised interactive media firms would substantially underestimate its practice. Further, it would neglect the alternative ways in which interactive media production is (and can be) organised, and thereby potential differences in working conditions for employees. By comparing the same practice in different institutional and organisational settings, it is possible to identify factors and processes that lead to certain outcomes in terms of working conditions and thereby identify possibilities for and hindrances to good jobs for employees in efficient companies.

Paying attention to the various ways of organising similar practices is always preferable in working life research, but it is especially important in the case of interactive media production. It has been argued that as part of the wider IT sector and the 'new economy', interactive media production is a sector characterised by change towards more fluid and flexible forms of work organisation, industrial relations and working conditions (Castells 1996; 2001; see Augustsson and Sandberg 2003a; 2003b for a discussion). This is described as an unavoidable consequence of the kind of creative and innovative work that is being performed by highly competent knowledge workers with new work ethics (Himanen et al. 2001), within newly started firms characterised by new forms of organisation and management. Much of this discourse consists of simplified exaggerations based on limited case studies of 'best practice' (or just deviant phenomena) and predictions of future developments. The past is not so homogenous, the changes not so great and partially contradictory, and future developments uncertain and complex (Sayer and Walker 1992; Sztompka 1993; Karlsson and Eriksson 2003; Edling and Sandberg 2003). Yet, the talk of a 'new economy' and changing working life is a powerful discourse that can create its own

change if actors feel that it is real, beneficial and unavoidable (Merton 1948; Augustsson and Sandberg 2003a).

In this report, we present results regarding differences and similarities between in-house interactive media production in organisations in general and specialised interactive media producers. The fact that differences do exist at all between the alternative organisational settings shows that developments are not deterministic, and outcomes in terms of the organisation of production and working conditions not unavoidable (Czarniawska 1997). It is only to a certain extent that the actual practice of producing interactive media determines the working conditions for different kinds of employees. In other words, it is not just what employees do, but where and how they do it, that determines their working conditions. Throughout the report and especially in the concluding discussion we present some possible explanations as to why certain differences can be observed between the two organisational settings.

3. A Brief Note on Method

A more extensive 'technical' account of the methods used to collect and analyse the empirical material used in the study is presented at the end of this report. We strongly advise that interested readers consult that section before interpreting the results. Here, we offer a brief description of the method as an introduction. This is followed by a discussion on the advantages and shortcomings of making comparisons between different studies, especially IM-2001 and IMSO-2002, but also NM-1997, a description of delimitations, and a note on internal differences in the material.

The object of study in this survey is Swedish companies and government agencies. The purpose is to investigate their internal production, subcontracting, maintenance and purchase of interactive media solutions. The study is limited to organisations with 200 or more employees that are not part of a larger organisation. Using the UC-Select database, this gave a population of 1,581 organisations in late 2001. A sample of 800 organisations was drawn from this population. The SCB (Statistics Sweden) database, which is considered to be the most complete one, had a total of 1,758 organisations with 200 or more employees[8] at the time when the sample for the study was made.

All organisations in the sample were contacted at the end of 2001 by a mail questionnaire in which they were initially asked whether they produce interactive media solutions themselves (either in full or parts of it), order and use it, or none of the above. Two reminders including new questionnaires were sent out, the last version containing only a limited number of questions.

371 organisations, 46 per cent,[9] answered the survey. One answer from a voluntary organisation has been excluded from the analyses. All further calculations and analyses are based on a maximum of 370 responses. 147 organisations, 40 per cent of respondents, produce their own interactive media solutions, either in full or parts of it.

[8] SCBs figure for 2002 is 1,781 organisations. That is the figure used for calculations regarding the overall size of in-house interactive media production in Sweden during 2002.

[9] Most mean and median figures in the report have been rounded off to whole numbers.

At least 138 organisations, 37 per cent, order and maintain such solutions and 86 respondents, 23 per cent, neither produce nor use such solutions. In follow-up studies of prior non-respondents, we have been able to classify 50 per cent of organisations. Thus, we lack information regarding half of the organisations in the sample.

The actual number of responses to single questions is lower than the total 370 responses, usually between 100 and 150, but in a few cases less than 50. This is not due to a high internal non-response rate. Instead, the reason is that respondents were asked alternative questions depending on whether they produce or purchase interactive media solutions. Base numbers (n) are presented for all figures and tables in order to facilitate judgements of validity and conclusions.

Comparisons: Prospects and Problems

Comparisons with the IM-2001 study (Sandberg and Augustsson 2002) bring with it both benefits and problems. The same methods of data collection were used, the same questions asked (mostly identically formulated) and the same statistical analyses were made in the same way by the same people. This means that the quality of comparison is higher than if it were compared to surveys conducted by different researchers whose methods of data collection, questionnaires and analyses are only partially known. This ensures the reliability of comparisons, i.e. whatever is done well or not is done so consistently and systematically, but not necessarily the validity.

The reason for caution is especially important given the belief that there has been a move of activities and workers from specialised interactive media producers to in-house production in organisations in other sectors during the last few years. In other words, organisations are thought to choose to purchase less and handle a larger proportion of their own interactive media production in-house. Drawing conclusions about movements between the two groups when the time of measurement differs no doubt might lead to faulty assumptions about changes. The need for caution applies most of all to issues of the volume and value of production in-house as compared to specialised interactive media firms. Most other results comparing e.g. organisation and products are minimally affected by company shake-out and restructuring.

Comparative material from the 1997 study (Sandberg 1998) has also been included in a few cases. Reasons to be cautious when interpreting results are especially relevant in this case as the 1997 study was truly exploratory. No prior Swedish national survey of interactive media production existed and only few international ones, and both our own and the respondents' knowledge of interactive media production was limited. Although most companies that answered the survey would still be classified as specialised interactive media producers, some would probably more appropriately classified as organisations that handle their own interactive media operations internally (i.e. the focus of this study). Comparisons between the NM-1997 and IM-2001 study are more valid than between NM-1997 and IMSO-2002. Still, many of the same

questions were asked in 2002 and 1997. The 1997 survey should be viewed as a way of giving a historical background, rather than as the basis for strict comparisons[10].

Definitions and Delimitations

The organisations included here are a sample of companies and government agencies in Sweden that produce all or parts of their interactive media solutions, or purchase and maintain such solutions. For matters of simplicity and to separate them from specialised interactive media producers or firms, we refer to these as 'organisations in general' throughout this report. Some internal differences between the two types of organisations are presented further on.

As mentioned, the study is limited to organisations with 200 or more employees. Although we do not explicitly state so in every case to avoid tedious repetition, the results are only claimed to be valid for Swedish organisations with more than 200 employees. There are three reasons for the delimitations. First, we did not want to limit the study only to companies, since interactive media plays an important role in government agencies, sometimes referred to as digital democracy or the 24 hour agency (SOU 2003:55). Second, to include all Swedish organisations would have been impossible for financial and practical reasons (according to SCB, there were 842,358 organisations in Sweden at the time). Drawing a sample from this would render a large proportion of smaller firms due to the uneven size distribution of organisations. Although a stratified sample could partially correct this, it brings with it other problems (see, for instance, Levinsson 2004). Third, it is mainly larger organisations that handle their own interactive media *production*. Smaller organisations also *use* such solutions to a large extent, especially Internet solutions. According to a recent study, 92 per cent of all Swedish firms with more than ten employees have an Internet connection and 80 per cent have a company website (SCB 2003). Still, many of them probably do not have the financial possibilities to set up interactive media operations internally. This means that calculations presented here of the size of in-house production and maintenance of interactive media solutions, both in terms of employees and capital, underestimate of the total size of the practice in Sweden (see chapter four).

Internal Differences

Our 371 responses are divided between 220 companies (59 per cent), one voluntary organisation (less than one per cent) and 150 government agencies (40 per cent). As there was only one voluntary organisation, we have excluded it from the analysis. The results are therefore based on a total of 370 firms and government agencies.

The distribution of organisational type in the responses is not equivalent to the distribution in the sample where firms made up 70 per cent of organisations and

[10] For more information on the differences between the 1997 and 2001 studies, see Sandberg and Augustsson (2002), and Augustsson's forthcoming dissertation.

government organisations just over 29 per cent[11]. Differences in overall response rates are probably due to interest and perceived obligation to answer the inquiry. As a result, the responses are somewhat biased towards government organisations at the expense of firms. We have systematically looked for differences in answers between the two groups to see if, and in what ways, they differ, and all differences that affect the analyses of results are reported in the text[12].

Table 1. Types of organisations and their involvement in interactive media. Percent and numbers of responses.

	Firms	Government Agencies	All organisations
Produce all	6 (12)	12 (18)	8 (30)
Produce some	28 (63)	36 (54)	32 (117)
Purchase	43 (95)	29 (43)	37 (138)
Do not use	23 (50)	23 (35)	23 (85)
Total	100 (220)	100 (150)	100 (370)

Source: Augustsson & Sandberg (2004)

Our results show that 34 per cent of companies produce all or parts of their interactive media internally. The equivalent figure for government agencies is 47 per cent (see table 1 and chapter four). It is hard to determine whether the differences in production and use in the sample are representative of the population. In other words: do the reported differences mirror actual differences in the population? Statistically, we know this is the case (since the distribution is significant), but theoretically and in practice we cannot be certain (as we do not know the real distribution of the population).

The study referred to earlier and made by SCB, for instance, shows almost all larger Swedish organisations have a website and yet we find here that 23 per cent claim not to use interactive media at all. We believe that the major reason for this deviance is the limited knowledge of interactive media and variations in terminology. During the process of data collection, we found several cases where respondents claimed not to use interactive media, despite having a website[13]. This suggests that the proportions of users, and perhaps also producers, are higher than our results indicate. This does not necessarily bias comparisons between producers and users. It does, however, mean that estimates of the size of in-house interactive media operations are most likely under estimated (see further chapter four).

[11] The proportion of voluntary organisations was roughly equivalent in the sample and the responses, i.e. practically non-existent. There are few voluntary organisations in Sweden with more than 200 *employees* although the number of *members* might be significantly larger.

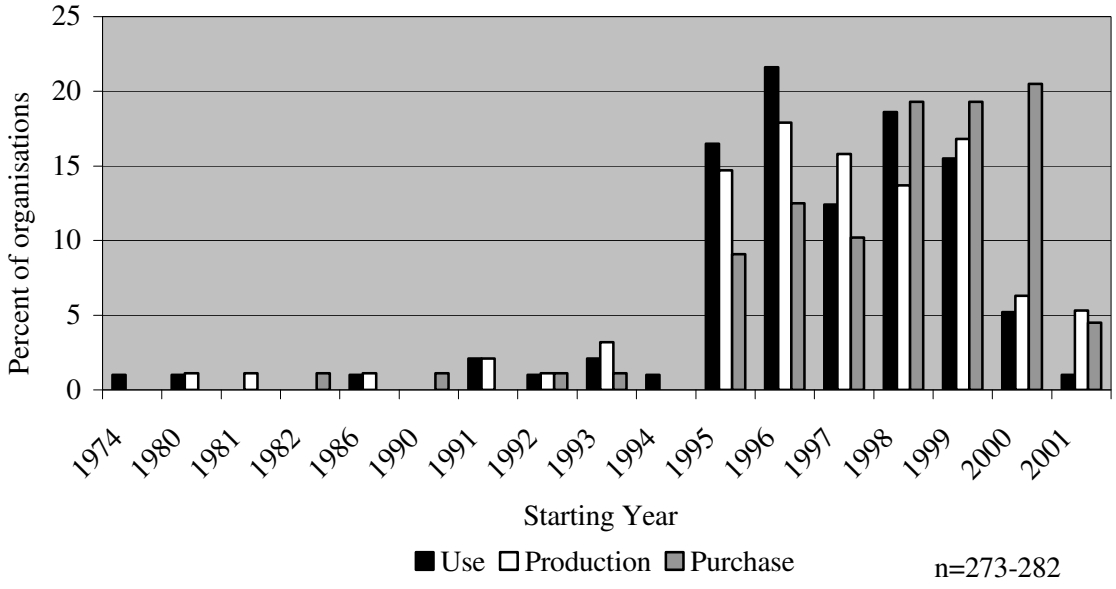
[12] Because the proportion of non-respondents was roughly 50 per cent and our knowledge of their involvement in interactive media limited, we have refrained from weighting results as this procedure rests on the assumption that non-respondents and respondents are identically distributed according to one variable (which in turn is thought to affect the distribution on other variables).

[13] These were contacted and given a new questionnaire and an elaborated explanation of what interactive media refers to.

4. The History and Size of In-House Interactive Media Production

It is often held in organisation theory that established organisations are characterised by inertia and that small newly started firms are fast movers, innovators and even entrepreneurs (Stinchcombe 1965; Carroll and Hannan 1995; Aldrich 1999). The latter are the first to adapt to changes and take advantage of new technologies, even if they have been developed by larger organisations. It has been assumed that this is also the case for interactive media production, that specialised firms were the earliest producers and established organisations entered later. Figure 1 shows the year that organisations which in late 2001 produce all or part of their interactive media solutions) started their *use* of such solutions (black bars), when they started *producing* their own solutions (white bars), and the year organisations which in late 2001 purchase all of their interactive media started *both their purchase and use* of such solutions (grey bars). Thus, the three bars represent two types of organisations, those that produce and those that purchase. For the first type, we have separated between start year of use and start year of production, since it is reasonable to assume that organisations might use interactive media before they start producing it themselves (although each single organisation that decides to develop their own solution must naturally produce it before they can use it). For the other type of organisation, we assume that starting year of use and purchase are the same[14].

Figure 1. Starting year of use, production and purchase of interactive media solutions among Swedish organisations.



Source: Augustsson & Sandberg (2004)

[14] It is of course possible that organisations that purchase all of their interactive media in 2001 started by producing and using and later switched to purchasing and using (i.e. outsourced production). This is generally not the case, though, as our findings regarding changes in the organisation of production reveal (see more in chapter nine).

On average organisations that produced interactive media in-house during 2001 started both their *use* and *production* of such solutions in 1996, the median being 1997[15]. Organisations that *purchase* and use interactive media started doing so, on average, in late 1997 (the median being 1998). Thus, organisations that produce their own solutions are early adopters of interactive media, although differences are rather small. There are no significant differences between firms and government agencies in terms of starting year of use or production

There are essentially two possible explanations for this difference in starting year, roughly corresponding to age and cohort of involvement in interactive media. The first explanation is that organisations tend to become more involved over time, meaning that they go from non-use to use, use to purchase and maintenance, to in-house production, either fully or in part. Differences in involvement between organisations would then be due to differences in time of entry. The second explanation is that there are differences between organisations. Dependent on structure, business area, demands, the attitudes and interpretations of management and other influential employees, or for other reasons, some organisations become more involved in interactive media than others. If this is the case, there is no reason to expect a homogenisation over time (unless the factors thought to influence interactive media adoption changes). The population of users will increase until saturation, but only some will become more deeply involved, i.e. produce their own interactive media[16].

If the degree of involvement in interactive media production is dependent on the starting time of use, we can expect a future increase in the number and proportion of organisations that produce their own solutions. This development is even more likely due to standardisation of technologies and the spread of knowledge. Such a development assumes that interest in and need for interactive media solutions is equal for all organisations (at least compared to increased ease of use), which is most likely not the case. Early adopters probably have more to gain from using such solutions, which will make it more likely that they choose to handle production internally[17].

The figures can be compared to specialised interactive media production companies, which were started on average in late 1992 (the median being 1996) and started producing interactive media in 1996 (1997 in median). The high correspondence between when Swedish organisations in general started using interactive media solutions and specialised interactive media companies started

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[15] For layout reasons, we have abridged longer categories, names and alternatives in some figures in the report. The 'do not know' and 'not relevant' categories have in many cases been left out. Original formulations (translated from Swedish) and unadjusted numbers are found in the Table Appendix at the end of the report.

[16] None of the explanations take 'backward' developments into account; that organisations might become less involved over time. Individual level studies have reported such developments, i.e. people that stop using the Internet and/or e-mail (Hamngren and Odhnoff 2003).

[17] Analyses of new technologies often contain descriptions of their diffusion. But the commonly observed s-shaped curves that portray diffusion and adoption of new technologies (and other phenomena, cf Hedström and Swedberg 1998, especially Schiller's chapter), are not proof of either of the two explanations. The data on diffusion has to be completed with information about the possible differences between early and late adopters, as well as the degree of involvement.

producing such solutions for external customers is natural: specialised companies could not have produced interactive media solutions if no one used them and organisations could not have used them unless someone produced them[18].

More interesting is that Swedish organisations started their in-house production of interactive media solutions on average at the same time as specialised interactive media companies started producing for external customers. This partially falsifies the common thesis that specialised companies could establish themselves because they had competencies that organisations in general were not able to acquire at that time. It was not because organisations lacked competitive advantage, a division of knowledge or organisational inertia that specialised firms could establish themselves. Our results indicate that it was a choice of some organisations to produce and of others not to produce. This only refers to larger organisations, though. Specialised interactive media producing firms received about 80 per cent of their revenues from organisations and 45 per cent of that from organisations with less than 100 employees in 1997, according to findings from the NM-1997 study (Sandberg 1998). Reports from other studies also show that smaller organisations produce interactive media internally to a lesser extent.

Three things should be kept in mind, though. First, actual numbers differ significantly between specialised interactive media producers and organisations in general. An estimated 260 interactive media producing companies started their production before 1996, as compared to roughly 170 organisations that produce interactive media internally. This corresponds to roughly ten per cent of all Swedish organisations with more than 200 employees[19]. Second, only a minority of firms and government agencies handle their own interactive media production internally. This means that there is some truth to the thesis of the inability or unwillingness of many organisations in this field to change quickly (assuming they would like to do so). There was, and still is, a market for specialised interactive media producing companies, even though some organisations handle their own operations. This is especially so given that organisations with less than 200 employees are not included.

Third, we have limited information about the complexity and quality of the interactive media solutions produced by specialised companies and organisations in general, both in 1997 and today. It may be that specialised firms develop more advanced solutions, while organisations in general produce simpler solutions. Results presented later regarding the activities organisations handle themselves and those outsourced to others offer a clue. One might have an idea that certain activities (such as programming) are more advanced than others (like copy). But to evaluate whether

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[18] It could of course be possible that Swedish interactive media firms started producing for non-Swedish organisations earlier than Swedish organisations started their use (export), or vice versa, that Swedish organisations purchased from firms situated abroad before Swedish interactive media firms started their production (import). But since the interactive media market is highly domestic (Sandberg and Augustsson 2002), this seems unlikely.

[19] Numbers are calculated based on population percentages, i.e. estimates of all Swedish organisations with 200 or more employees during 2002 (according to SCB) and the total number of specialist interactive media producers in 2001 (according to our estimates in Sandberg and Augustsson 2002).

the activity in itself – be it programming or copy – is more advanced when handled by specialised firms than when done in-house requires detailed evaluations of the actual solutions produced, as well as the development process. It may simply be a case of different types of solutions being produced.

Estimates of the Size of Interactive Media

It is complicated to calculate the total extent of interactive media in general or at any given period in time (or other economic activities for that matter) for several reasons. However our experience is that the extent of a phenomenon is one of the first things that practitioners, policy makers and researchers (for partially different reasons) want to know about. Although definite answers cannot be given here or elsewhere, we have attempted to make qualified estimates of the extent of interactive media in Sweden during late 2001/early 2002.

In the IM-2001 study the size of interactive media production was measured as the number of companies, the number of employees focusing on interactive media production, and the total annual turnover from interactive media production. Here, only the first two measures are available. The main reason is that we assume most organisations (for obvious reasons) do not measure their internal interactive media operations as turnover. If interactive media is financially measured separately at all, it is most likely as a cost or investment, which is not the same as turnover. Furthermore, the cost is in many cases probably combined with or included in other costs, such as IT, computer hard- and software and information.

Our results show that 40 per cent of organisations handle their own interactive media production internally, either in whole or in parts (see figure 2). According to our findings, they have an average of ten (and a median of three) full time employees responsible for this production when outliers are removed[20]. Multiplied with the total number of organisations in the population that produce interactive media, this would mean that roughly 710 Swedish organisations with more than 200 employees had in-house interactive media operations that employed about 7,100 at the end of 2001/early 2002. To this can be added roughly another 4,500 employees working with purchasing and maintenance of interactive media solutions. In total, this would mean that in the end of 2001 there were at least 11,600 employees producing, maintaining and purchasing interactive media solutions within Swedish organisations with more than 200 employees.

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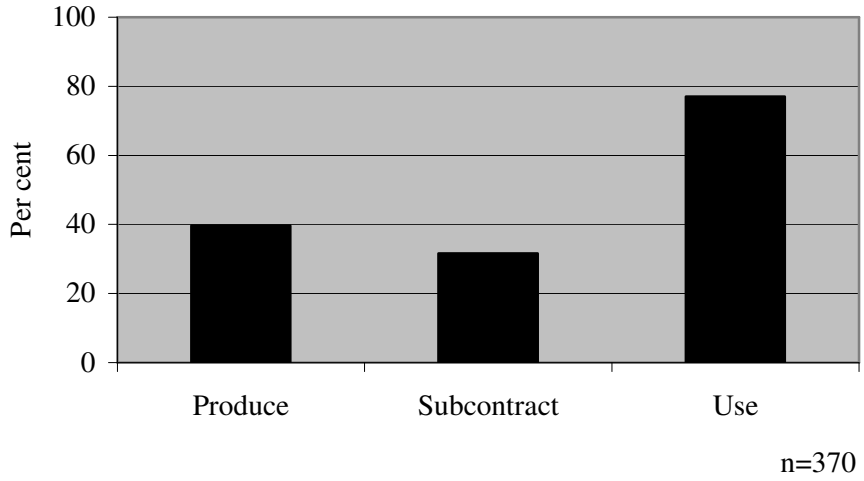
[20] Our sample included one organisation that claims to have more 3,500 employees working with interactive media production, and another one with 1,270. These estimates probably refer to the total number of employees within the organisation, or perhaps to all those using interactive media solutions in their work. The only known firms that might hold such numbers of interactive media employees are a few game developers and software producers. None of them are part of our sample, though. Outliers like these were removed by setting an upper limit at 500 employees working with interactive media. In practice, this means that the organisation with the largest interactive media operations included have 230 interactive media employees, the second largest 150 and then a couple at 60, 50, 40, and so on down to one. The outliers are excluded in all calculations related to size and using weighted values.

Figure 2. Percentage of Swedish organisations that produce, subcontract and use interactive media solutions in 2001.



Source: Augustsson & Sandberg (2004)

11,600 employees is probably an underestimate since there is reason to believe that there are organisations that claim not to use interactive media solutions that actually purchase, or even produce, such solutions. Still, some of them claim to not use interactive at all in this survey. Further, the figure above does not include employees working with similar tasks in smaller organisations, something that would rapidly increase the number of employees[21].

The figures above, although not certain for the reasons mentioned, can be compared to the estimate that there were between 750 and 1,000 active specialised interactive media producing firms in 2001 with roughly 13,800 employees, half of them, 6,900, focusing on the actual production of interactive media (Sandberg and Augustsson 2002). This would mean that the practice of in-house interactive media production in late 2001/early 2002 was definitely as large, and probably larger, than the much more visible and talked about specialised interactive media industry. It would also mean that the total number of Swedish employees working with interactive media production exceeded 14,000, and including maintenance and purchase probably more than 18,500 even without counting employees in organisations with less than 200 employees.

The results clearly show the importance of not limiting the role of IT and interactive media to specific 'new economy' sectors or companies, but to also look at the adoption in the 'old economy'. If the actual impact of interactive media in organisations is to be accurately determined, it is imperative to look at the practice (i.e. what employees and

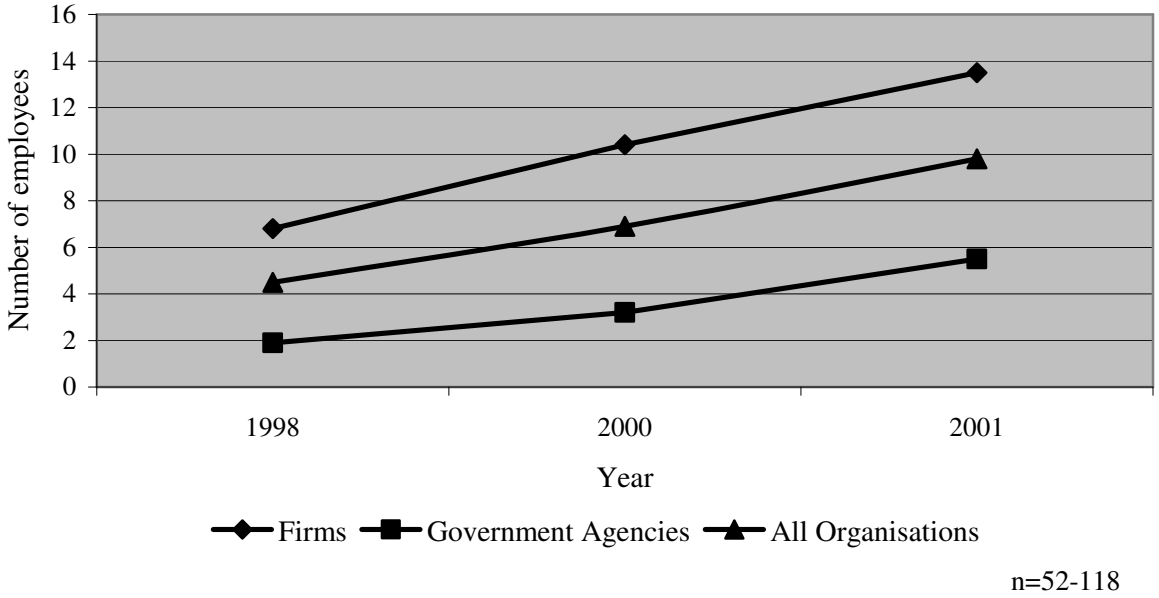
[21] If only one per cent of organisations with between 10-199 employees are estimated to have just one employee each that produce, maintain or purchase interactive media solutions, the total figure rises with about 330 employees. This is just an estimate, but it is probably not an overestimate, and shows how rapidly the total number of employees increases if smaller organisations are included. We would not be surprised if the total number of employees within interactive media operations, including purchase and maintenance, exceeds 30,000.

organisations actually do) and not at what employees and organisations call themselves, or are named by others (cf. Thompson and Warhurst 1998; Hansen 2001). There is a common belief that interactive media is dead because it is no longer talked about in the media. But the practice is still there. It has gone from overexposure to receiving little, or no, attention at all (Lennstrand 2001; Petterson and Leigard 2002).

Flows of Interactive Media Production and Employees

Based on the figures above and the six month time lag between the IM-2001 and IMSO-2002 studies, one may question whether or not the estimated larger group of employees focusing on interactive media production internally is a sign of a move away from the financially troubled interactive media industry towards in-house operations. In other words, are organisations insourcing the production of interactive media from external companies? To answer this, we asked those organisations which produce interactive media in-house how many employees producing interactive media they had one year ago (late 2000), and three years ago (late 1998). The results, presented in figure 3, show that the average number of employees producing interactive media was 4.5 in 1998, 6.9 in 2000 and 9.8 in late 2001, which indicates growth in in-house production.

Figure 3. Changes in number of employees producing interactive media within firms, government agencies and all organisations. 1998, 2000, and 2001.



n=52-118

Source: Augustsson & Sandberg (2004)

Proportionate average growth in the number of employees is similar between firms and government agencies, more than doubling in three years. But differences in actual numbers of employees have increased as firms started with a higher number in 1998. We also asked organisations whether they intended to increase or decrease the number of employees producing interactive media in the coming twelve months (roughly equivalent to the end of 2002). 93 per cent of firms neither intend to increase or decrease their number of employees. Seven per cent intend to hire more employees ('do not know' excluded). The few organisations that intend to increase their numbers of employees expect to hire only between one and three additional staff each. None intend to reduce the number of employees working with interactive media production.

An increase in in-house production does not necessarily imply a decrease in the interactive media production subcontracted to or purchased from specialist companies. It might be that both activities increase; growth in one type of organisation does not have to be at the expense of the other type. There are also flows to and from other sectors and companies than the organisations in general and specialised interactive media producers, as well as new workers entering and exiting the labour market.

The growing tendency in actual numbers is not found to the same extent when looking at organisations that only maintain and purchase interactive media solutions. Numbers here have been more stable, with 0.9 employees in 1998, 1.8 in 2000 and 2.2 in 2001 (still, percentage growth rates are higher, 117 per cent for production and 144 per cent for purchase). Median figures are 0.5, one and two employees, respectively[22]. Differences between firms and government agencies are small for all three years. This seems reasonable given that the number of people that are needed to maintain or purchase solutions does not increase linearly with the complexity or number of solutions. Even though an organisation might use more interactive media solutions, it does not necessarily need more people to purchase and maintain them.

What initially appears as an increase in the interactive media production that organisations in general perform internally is more complicated. Internal interactive media operations, whether they are production or maintenance and purchasing, only increase to a certain level and then stabilise, at least momentarily. The visible increase in the average number of employees is not simply a sign of an increase in the amount of in-house production each organisation performs. It also reflects an increase in the number of organisations that handle their own interactive media operations internally. The reason why average numbers of employees increase is that organisations that did not previously use and produce interactive media now do so[23]. Once organisations

[22] We have excluded one purchasing organisation with a large number of employees (330) that seriously altered the results (a so-called outlier). The reported number of employees for that organisation may be correct, but is far from representative of the population. If included, the number of employees working with interactive media in firms that only purchase and maintain such solutions would be 5.6 in 1997, 6.4 in 2001 and 6.9 in 2002.

[23] This occurs because organisations that in 2001 produce interactive media (and so have employees doing this) were asked the number of employees they had one and three years ago. Organisations that did not produce any interactive media in those years will report zero employees which lowers the overall average as the mean is calculated on all organisations. All else equal, the number of

have reached a certain number of employees, changes are small. This tendency should be interpreted with some caution in light of the economic climate of 2001-2003; organisations have generally been cautious in hiring due to the economic recession.

By looking at detailed figures on when organisations started using, producing, and purchasing interactive media, we see that of organisations that in 2001 produced all or parts of their interactive media, 94 per cent started their *use* before 2000 and 89 per cent their *production* during the same years (figure 1). The number of new users and producers after 1999 is low. Organisations seem to have made the choice to use and produce interactive media before 2000, and changes thereafter are small. Organisations that in 2001 purchased all of their interactive media generally started later, 75 per cent before 2000. This could indicate that the number of new organisations that will start producing interactive media internally will be low, at least for the immediate future[24].

The increase in organisations that produce their own interactive media is dependent upon and limited by the number of organisations that use interactive media: if no organisations produce interactive media, no one can use it. What we see now is a situation where all but a few organisations use interactive media solutions, even if this only means having a website (SCB 2003). Thus, it is highly unlikely that the market for interactive media, in terms of numbers of customers, will increase in the foreseeable future. What might happen is a change in the size (complexity and cost) of the solutions produced and used, as well as in the organisation of production.

Subcontracting and Purchase

85 per cent of organisations that do not produce any interactive media at all internally purchased interactive media solutions during 2001 at an average value of 1.75 MSEK (figure 4). As this figure, and the following ones, only includes organisations with more than 200 employees, it is just a portion of the total market for interactive media. Further, it only refers to business clients; the private consumer market is not included. Organisations that produce part of their own interactive media solutions are also important *customers* of interactive media since they outsource and subcontract production to other companies. 86 per cent of the organisations that produce part of their own interactive media internally subcontracted interactive media production during the twelve months prior to the study, roughly equivalent to the year 2001. On average, they subcontracted interactive media production at an estimated value of 1.83 MSEK. This would mean that in Sweden 2001, the total value of interactive media production subcontracted by organisations with more than 200 employees was 880 MSEK, and the value bought by organisations of the same size was at least 995 MSEK, in total 1,875 MSEK.

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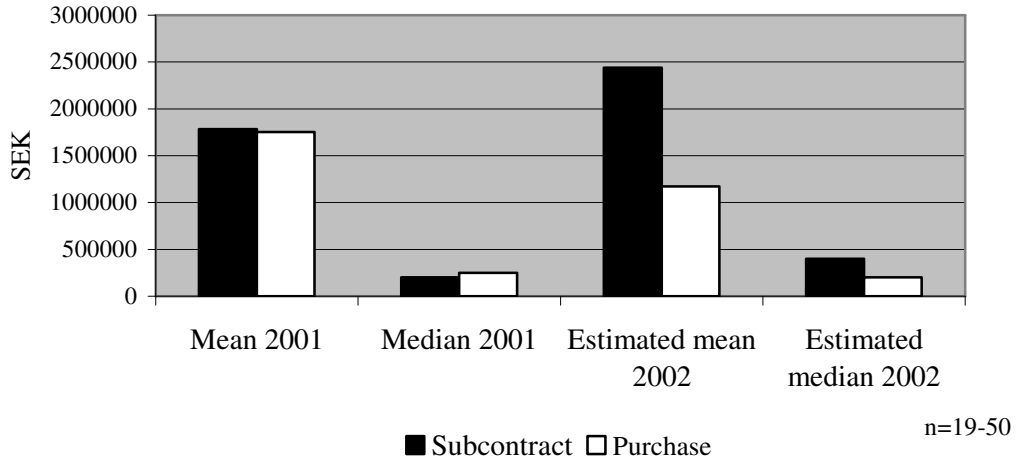
organisations that start producing interactive media (i.e. go from 0 to 0+*n* employees) will lead to an increase in average number of employees. If only organisations that do in fact have employees in all three years are included, the number of employees for all organisations that produce all or some would be 6.3 three years ago, 8.23 one year ago and 9.95 'now' (i.e. the end of 2001).

[24] As the study was done in late 2001, there is a limit to how late starters can be detected. But the dramatic drop in production and use appears already in 2000, and in purchase somewhat later.

Figure 4. Mean and median values of subcontracted and purchased interactive media in 2001 among Swedish organisations.



Source: Augustsson & Sandberg (2004)

The market for subcontracted and purchased interactive media production is far from evenly distributed. While half of organisations subcontracted or purchased solutions for less than 200,000 SEK in 2001, there are a small number of organisations that purchase solutions for tens of millions. This is reflected by the median figures, 200,000 SEK and 250,000 SEK for subcontracting and purchase, respectively. Although median figures for purchase are higher than those for subcontracting, it seems that the total amount spent on interactive media is higher for organisations that also produce some parts themselves.

96 per cent of organisations that handle some of their own interactive media production internally stated that they would subcontract production in the following twelve months (roughly during 2002) at an estimated average value of 2.55 MSEK and a median of 400,000 SEK. 78 per cent of organisations that do not handle any of their own interactive media internally state that they will purchase such solutions in the following twelve months and estimate that the average value will be 1.17 MSEK (with the median 200,000 SEK). This would mean that the estimated total market for subcontracted interactive media in 2002 was 1,370 MSEK, and 610 MSEK for purchased solutions, in total 1,980 MSEK.

According to these figures, the market for subcontracted and purchased interactive media production among Swedish organisations with more than 200 employees was estimated to grow by five per cent between the year 2001 and 2002 with subcontracting organisations increasing their market share and purchasing organisations decreasing theirs. These figures are based on estimates, though, and are likely to differ from the real outcome (although aggregate figures might dampen organisation-level deviances). It should also be taken into consideration that a high proportion of respondents, especially those that only purchase interactive media solutions, said that they could not estimate the amount. Furthermore, the proportion of

organisations that will subcontract interactive media production is estimated to increase in 2002, while the proportion that purchase solutions will decrease. This may reflect a polarisation between organisations: those that produce parts internally will increase investments in interactive media, while organisations that purchase such solutions will decrease investments. The latter have already purchased a solution and will mainly just do follow-up orders and minor alterations.

The values purchased or subcontracted for in 2001 are further strongly correlated to estimates of 2002 purchase and subcontracting. Respondents estimate that their future investments in interactive media will more or less be in line with previous and on-going investments, regardless of whether this constitutes purchase or subcontracting. Four factors can explain this. First, interactive media production is not a project limited in time; a solution once purchased or produced with little or no costs for maintenance. Instead, it is a service that requires repeated attention and therefore is constantly associated with costs. Second, it might be that interactive media is in fact a limited purchase, but one that runs over several years. However it seems unlikely that a majority of organisations were currently in the middle of projects in 2001 and 2002[25]. Third, and following the theme above: some organisations have made large investments and become deeply involved in interactive media, and predict this will continue. Others have made limited investments and do not expect this to change. Fourth, it might be due to psychological factors. It is well known that in statistical surveys people have a tendency to estimate that contemporary trends will continue unchanged if they know of no factors that will seriously alter conditions. Although we believe the fourth explanation to have some impact on responses, we argue that it is a combination of the first three: interactive media is an on-going activity in some organisations and therefore something that constantly costs. For other organisations, it is a more limited solution that after construction and implementation is mostly just maintained. Whatever the case, organisations tend to continue on their selected path, partly due to organisational inertia (Ahrne and Papakostas 2002).

Taken together this may indicate a future polarisation of the market for interactive media solutions with one type of high value customers that are extensive users, producers and purchasers, and another type that purchase one solution and place fewer resources and less money into maintenance and smaller upgrades until a major shift is necessary. A third type can be added to this - organisations that choose to handle all of their interactive media production in-house, which as such have little or no relation to the market where specialised interactive media producing companies compete. The extent of their interactive media operations cannot be measured as purchase or subcontracted value (although perhaps as potential market share if they choose to outsource their production). Hence, they are not included in the estimates made earlier.

[25] It is not impossible, though. Like some other computer related artefacts, PCs, programmes and interactive media solutions develop through generations and there is a limited time before they are, or feel, outdated. Given that the start of use and production of interactive media is centred around 1996/1997, it could be that a majority of organisations are in the middle of their second or third technical shift.

Comparisons based on the number of employees involved in interactive media operations show that it is strongly correlated to organisations' involvement in interactive media[26]. Thus, although organisations that produce everything themselves only comprise eight per cent of all Swedish organisations with more than 200 employees (and ten per cent of organisations that use interactive media), their share of all interactive media operations is probably larger.

With regard to the massive changes that interactive media production and use has gone through in the last couple of years (Johansson 2001), the overall conclusion must be that the contemporary (i.e. 2002) situation is one unusual stability in terms of size and trends towards polarisation. A five per cent increase is in line with general movements in other areas of the economy. Even though we may be witnessing a polarisation of interactive media operations, it is clear that changes, at least in terms of number of employees and capital, are much smaller than before. One can talk of a momentary normalisation of Swedish interactive media production, in terms of size, and to some extent also its structural organisation.

5. Organisation and Subcontracting

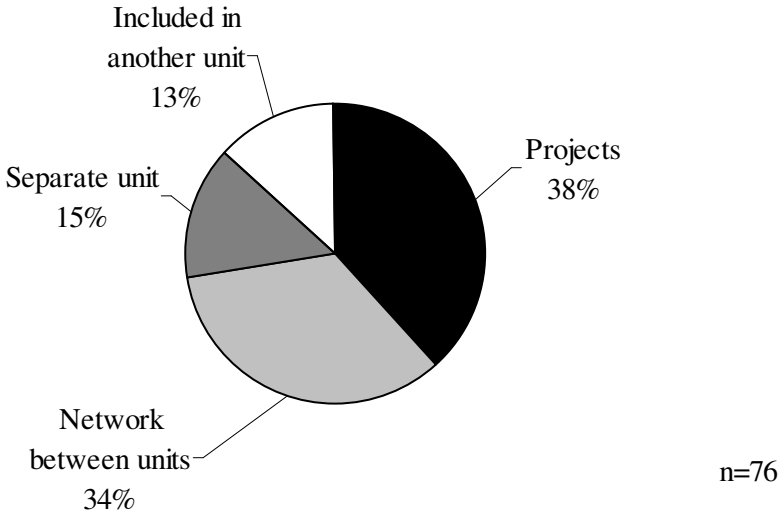
The size of in-house production and purchase of interactive media provides an overview of its distribution among alternative forms of producing organisations. To get a more detailed view of the actual organisation of interactive media production, we here look at the internal organisation, distribution of activities, forms of co-operation and networks between organisations. The information obtained at the firm level is limited. More data on the internal division of labour will be reported in our forthcoming individual level study (Sandberg forthcoming).

Internal Organisation

The 144 organisations in the survey that produce all or parts of their interactive media solutions were asked how they organise their internal interactive media operations. The results (shown in figure 5) show that 38 per cent organise it as projects, 15 per cent as a separate unit or department, 34 per cent as a network consisting of several departments, and 13 per cent include their operations in another department (most likely the IT or information department).

[26] This can be expected given the earlier reported differences in the number of employees between organisations that produce and purchase interactive media.

Figure 5. Organisation of in-house interactive media production within Swedish organisations.



Source: Augustsson & Sandberg (2004)

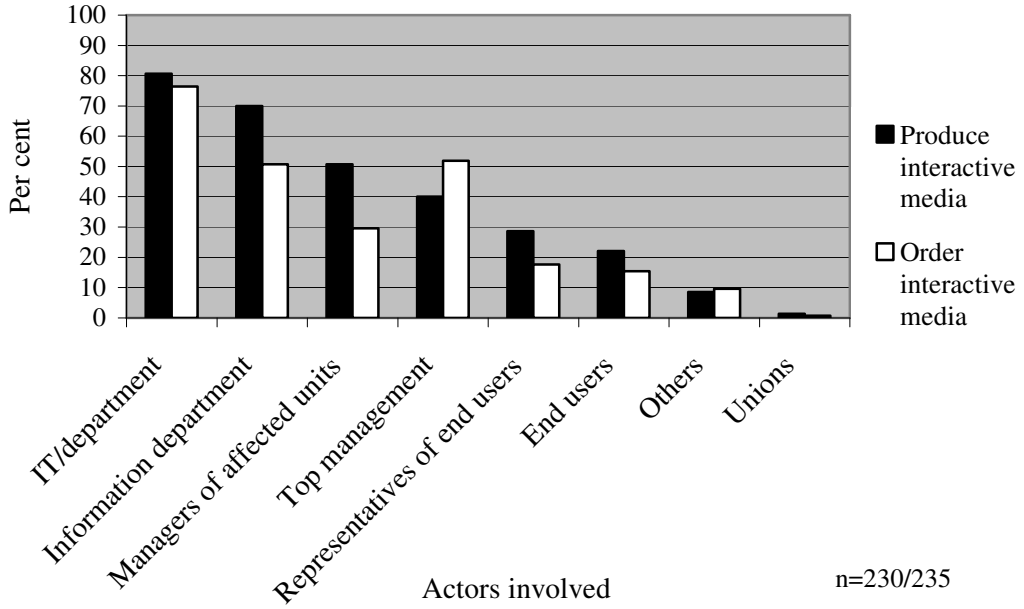
Thus, in only a minority of cases is interactive media production formed as a separate unit or department. In many cases, it is performed as distinct projects (and in the periods between these projects perhaps more limited in size). In the rest of cases, interactive media production involves several other units, either as part of another department or as a network between units. These findings seem reasonable given the nature and role of interactive media solutions within organisations in general. For many organisations, the production of an interactive media solution is a project limited in time with only minor maintenance between larger alterations. In other organisations, where interactive media plays a larger role, it naturally relates to and continuously affects other functions. Interesting to note is that analyses show that the amount of production is not correlated to an organisation in terms of formality or stability (assuming that a separate department is structurally more stable than a network or project). This suggests that organisations, even if in-house interactive media operations are comparatively large, do not add to the structural size or complexity by adding another unit. This seems reasonable given that the late 1990s, the period when many organisations developed interactive media operations, was one generally characterised by downsizing, subcontracting and outsourcing, at least in discourse (Björkman 2003; Furusten 1999).

Involvement

To obtain a more detailed picture of the organisation of interactive media operations within the organisations, we asked which groups of internal actors were involved in the production of the most recent interactive media solution. The findings, shown in figure 6, reveal that the most frequent participants were the IT department (in 81 per cent of cases), the information department (69 per cent) and managers of departments affected (51 per cent). The least involved were representatives of end users (29 per

cent), the end users themselves (23 per cent) and union representatives (1.5 per cent). When the same question was asked to organisations that only order and maintain such solutions, we find some differences. Top management is more often represented, whereas all other groups have less influence over the decision-making process (compare Mähring 2002).

Figure 6. Groups involved in the development/ordering process of the most recent interactive media solution in organisations. More than one answer possible.



Source: Augustsson & Sandberg (2004)

Two conclusions can be drawn from the findings above. First, despite much talk about the need for user-oriented and participative design and the legacy of the Scandinavian School of participative IT design (Ehn 1988; Bödker et al. 2000), the involvement of users and their representatives in the design of interactive media solutions is still very limited even though they are the ones whose work will probably be effected most. It is important here to separate involvement or participation from actual influence over decision-making. Involvement is a prerequisite for influence, but no guarantee of it. Considering the high and growing importance of interactive media for an increasing proportion of employees, this is a serious problem that has not been either recognised or discussed enough. The working conditions of a large proportion of workers are increasingly determined by computerised solutions, the design of which they have limited possibilities to be involved in, let alone influence (compare Augustsson and Sandberg 2003a). Less is known from our data about the results of differences in the participation and influence of alternative groups on the actual design of interactive media solutions and its effects on working conditions. Still, it seems reasonable to say that lacking even the possibility to influence the design of interactive media solutions lessens the probability of finding solutions that benefits one's working conditions.

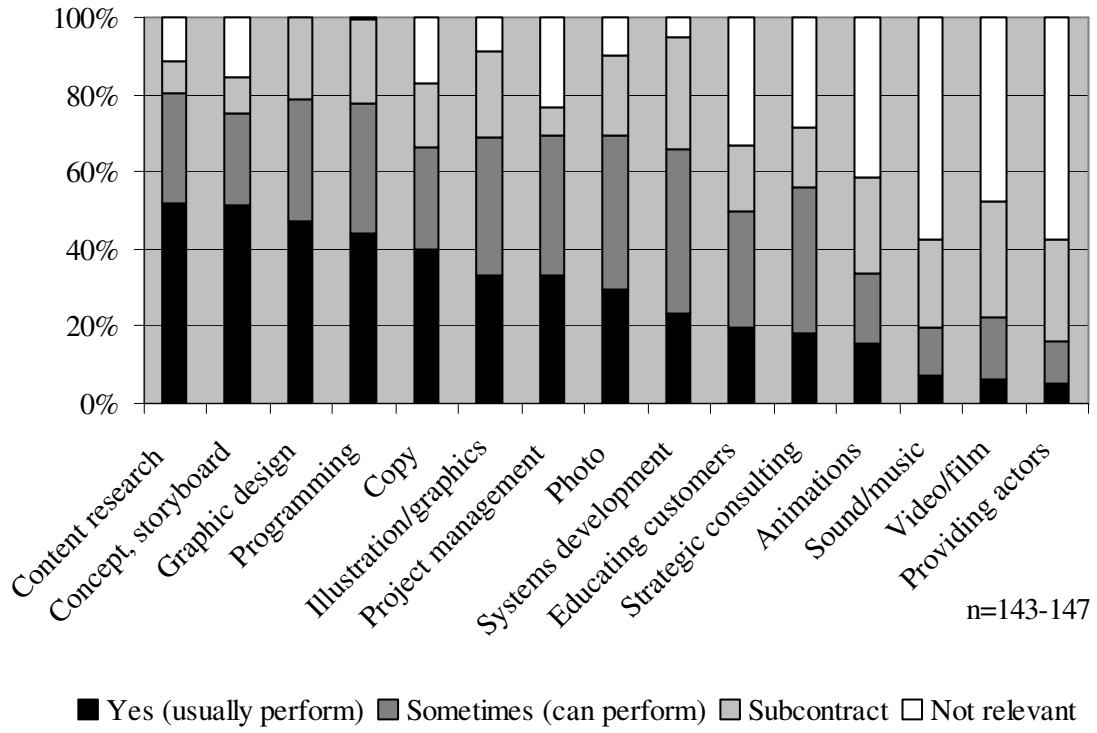
Second, the decision-making process surrounding the choice of how an interactive media solution will be designed is more centralised when organisations do not produce their own solutions internally. All groups of actors apart from top management are involved in a smaller proportion of organisations when solutions are purchased, rather than produced internally. The differences are especially visible for information departments, managers of affected units and representatives of end users. It might be that users and other members of the organisation find it easier to demand involvement in the design process of interactive media solutions when they are at least partially produced by employees in their own company, than when the solutions are purchased as commodities. A commodity is, perhaps less viewed as a social construction than an (at least partially) visible development and design process (Grint and Woolgar 1997; Bijker et al. 1987). From the perspective of users it may seem that they are involved more often when the production is handled at least partially internally, but they are not better off in either case. It is mainly a marginal difference.

Activities Performed and Subcontracted

This section concerns the actual parts of interactive media production that organisations perform themselves and what they subcontract to other companies. Here, we used the same list of 16 activities (including 'other activities') as in the IM-2001 for matters of comparison. These are all activities that practitioners have regarded as being part of interactive media production, although to varying extents. The results (in figure 7) show that the most common activities organisations choose to handle themselves are concept and storyboard (49 per cent do most of it themselves), content research (48 per cent) and graphic/web design (48 per cent). The least common are sound/music, video/film, animations and actors for sound and picture. The reason why the latter rank low is because they are specialised, low-volume activities, and not part of most organisations' interactive media solutions. This can be seen by comparing figures for production, subcontracting and purchase of the activities mentioned. The activities rank low in all cases, meaning that the overall incidence of these activities is low. It is also seen by the fact that between 40 and 60 per cent of organisations claim that the four activities mentioned are not relevant for their productions[27]. If these activities are taken aside, the least common are systems development (23 per cent do most of it themselves), education of users (17 per cent) and strategic consulting on interactive media (16 per cent).

[27] Not relevant can here mean both that it is not a relevant activity because it is not performed either by the own organisation or subcontracted (even though perhaps it should be), and that the activity is considered irrelevant for the purpose or daily operations of the organisation.

Figure 7. Swedish organisations' production and subcontracting of different aspects of interactive media solutions in 2001.



Source: Augustsson & Sandberg (2004)

The findings above more or less resemble what we found in our previous study (Sandberg and Augustsson 2002), given that the organisations here are interpreted as equivalent to the customer organisations in that study. In the prior study we asked specialised interactive media producers what they do themselves, what they outsource, what they do as subcontractors and what activities their customers perform themselves. Organisations are deeply involved in the activities where they can be thought to have privileged knowledge: they know what kind of solution they want and they have knowledge about the content the solution should contain. Interesting to note is that compared to the findings from the previous study, organisations here are more often involved in different aspects of interactive media production. In the earlier study, the specialised interactive media companies claimed that even in the minority of projects when customer organisations were involved, their involvement in any of the activities was not more often than 30 per cent of cases. Here, figures are more than twice as high in some cases. One reason is that only organisations with 200 or more employees are included here, whereas customers referred to in the previous study were of all sizes. An interpretation could be that organisations have become more involved in the six months between the two studies. But even if trends show that in-house production is increasing slightly, it is unlikely that changes have been this dramatic. A partial explanation that it is important to keep in mind when interpreting results is that companies have a tendency to overestimate the role they play in performing certain functions compared to others.

The fact that few organisations are involved in animations, sound and vision, video/film and sound/music reflects that these activities are only relevant for certain types of interactive media solutions (mainly, but not exclusively, computer games and CD-ROMs/DVDs). Even when the activities mentioned are relevant to the interactive media solutions that organisations use, the majority subcontract them to other companies. The high levels of subcontracting of systems development, education and strategic advice is probably because these are specialist competencies that only experts have, and the benefits of permanently having them represented within the organisation might be low.

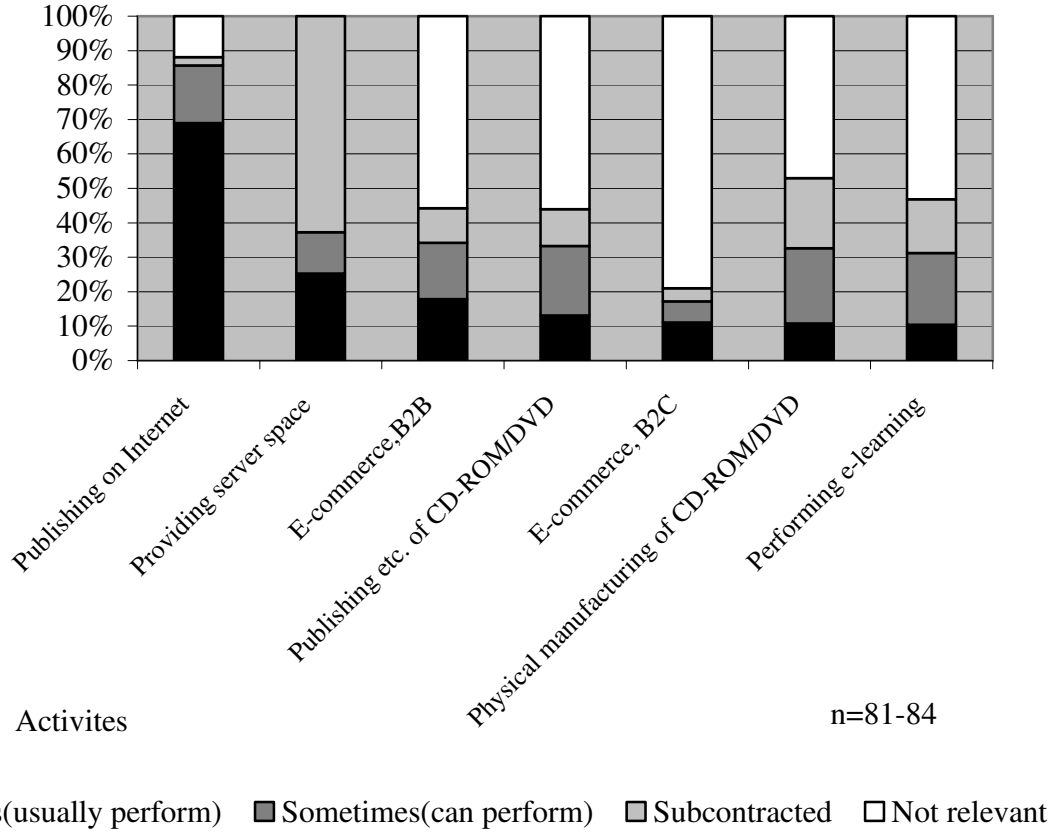
It is interesting to note that there is a variation regarding what organisations handle internally. The decision of whether to produce oneself, subcontract or purchase (so called make or buy decisions) is not static. Instead, it differs over time. In figure 7, it can be seen that the proportion of organisations that sometimes perform an activity is just as high, or even higher, than those that usually perform or subcontract it. This supports previous findings that it is not just a question of whether to get involved in interactive media or not, but also what to actually do in production. It further shows that organisations in general have a broader knowledge of interactive media than they take advantage of in every development

To gain a broader perspective of the role of interactive media operations within organisations, we asked about the extent to which they perform a number of supportive functions (see figure 8). The most common supportive functions apart from publishing on the Internet[28] are to offer server space (26 per cent) and conduct e-business with other organisations, B2B (18 per cent). The other activities rank lower, mainly because they are not really relevant for the organisation, but are not insignificant. Most are either performed or purchased by between ten and 20 per cent of all Swedish organisations[29]. Of note is the relatively low proportion of organisations that are in any way involved in B2C. Just above ten per cent do this themselves and it is only relevant for just above 20 per cent of the organisations that produce interactive media in-house. Here one can again see the variation described above between organisations, but also internally: the same organisation sometimes handles a supportive function, and sometimes it does not.

[28] Publication on Internet/web-portal ranked highest (68 per cent), but we believe this answer is a misinterpretation of our intentions. Some respondents have claimed that they perform this activity just because they have a website, while we intended this to mean the use of websites to publish material and to host a web-portal including other organisations.

[29] Calculations are based on the overall 40 per cent of firms who produce whole or parts of solutions times the percentage of firms who say the respective function is relevant.

Figure 8. Related interactive media activities performed by organisations, subcontracted to other actors, or not relevant.



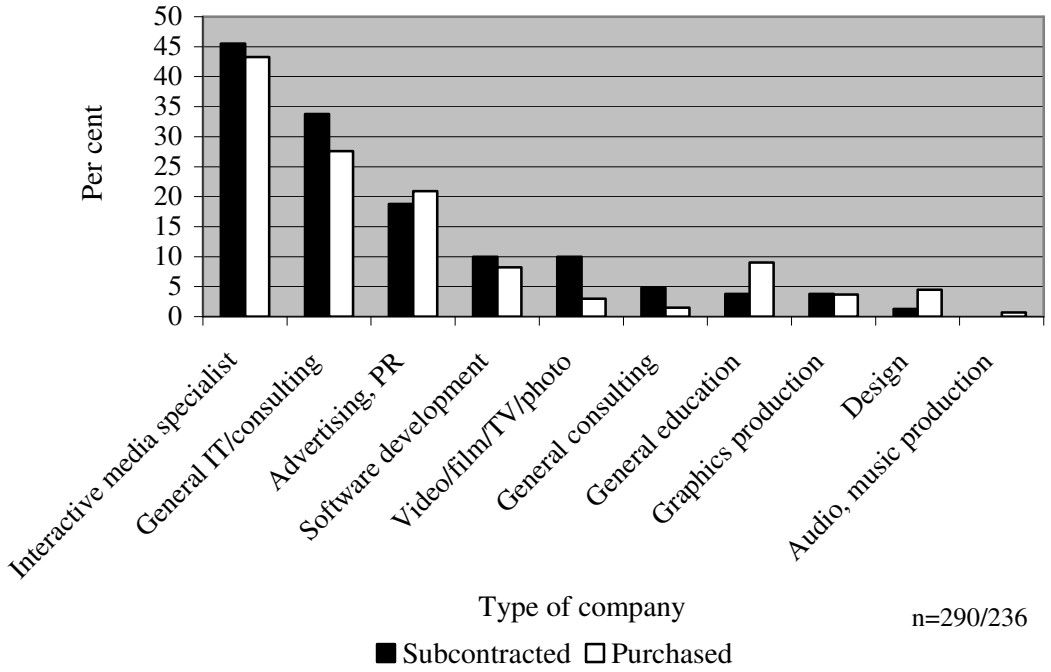
Source: Augustsson & Sandberg (2004)

Interactive Media Supply Firms

To get a picture of the type of companies that organisations purchase solutions from, or subcontract part of production to, we asked what kind of company they used as the main contractor the *last* time they purchased or subcontracted production (figure 9). The most common type of company that organisations turned to when subcontracting was specialised interactive media consultants (46 per cent of organisations that subcontract turn to them), general IT consultants (35 per cent) and advertising agencies (19 per cent)[30]. The remainder measure around ten per cent or lower. The equivalent figures for organisations that purchase interactive media solutions are specialised interactive media consultants (43 per cent), general IT consultants (28 per cent) and advertising agencies (21 per cent).

[30] Organisations can have more than one main supplier, the total sum exceeds 100 per cent.

Figure 9. The types of companies that organisations turned to the last time they sub-contracted/purchased interactive media. Comment: More than one answer possible.



Source: Augustsson & Sandberg (2004)

The resemblance in the results between subcontracting and purchasing are striking. One could assume that organisations that produce some parts of their interactive media solutions while subcontracting the rest to other companies would have turned to companies focussed on the specific services inherent in an interactive media solution, rather than a firm working with all aspects of interactive media, at least to a higher extent than organisations that purchase whole solutions. The former organisations can be thought to have more knowledge of precisely what they want and know where to find it. Therefore, they might approach specialist firms directly, rather than interactive media companies or IT consultants in general. An explanation might be that they are unaware of other firms that can provide equivalent services.

The high proportion of organisations that turn to interactive media firms is interesting. Although they have only been in existence for a short period of time it seems that the firms have convinced potential customers they are the most suitable suppliers of interactive media solutions, even though a range of other kinds of firms can deliver similar solutions. However, it might also be the case that some of the collaborators identified by organisations as specialised interactive media producers are in reality active in several others areas, but customers may not have come across these. The IM-2001 study showed that 75 per cent of firms were active in at least one area other than interactive media and that they derived an average of 50 per cent of turnover from other areas. Thus, what might be perceived as a firm specialising in producing interactive media in reality has a broader area of business.

6. Strategies for Subcontracting and Purchasing of Interactive Media

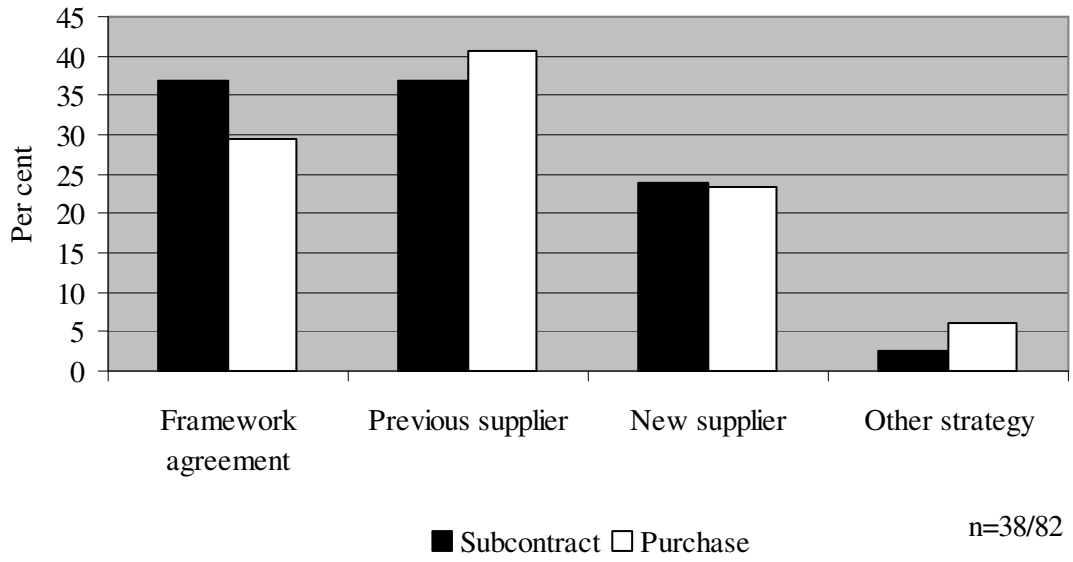
The constancy of the findings presented above regarding the type of companies contacted when subcontracting or purchasing an interactive media solution make it interesting to investigate strategies used to find collaborating partners. Here, we have information about the actual organisation of subcontracting or purchase, the strategy for choosing a company, the number of companies that organisations have stable relations to, and the perceived mutual dependencies relative to that supplier. Taken together, these findings show the form and stability of the relation between organisations that subcontract or purchase interactive media solutions and the companies with whom they collaborate.

Finding Firms

64 per cent of organisations that subcontract part of their interactive media production ordered everything from a single supplier. The same figure for organisations that purchase everything is 79 per cent. The rest, 36 and 21 per cent respectively, use 'other solutions' or contacted different companies for alternative functions and assemble the parts themselves. This further shows that many organisations are not mere customers of ready-made solutions produced by specialised production companies, but take an active part in the production of their own interactive media solutions. Yet again, organisations that produce interactive media seem to take a more active role not only in the parts they produce themselves, but the whole process, by including more collaborators. As with the findings reported above regarding the extent to which organisations handle different functions themselves, self-reported activities tend to exceed the total sum of interactive media production (compare Sandberg and Augustsson 2002).

Organisations were asked what strategy they used to subcontract or purchase their last solution; how they decided which companies to collaborate with. The purpose was to investigate how common it is to continuously use the same supplier and also the type of contracts used with partners. This rests on the notion that the economy is socially structured with various formal and informal relations between different and differing actors, meaning that actors will tend to interact more with some actors than with others (Baker 1984; Granovetter 1985; Håkansson and Snehota 1995). Organisations that subcontract production followed already existing framework agreements with previously used suppliers in 37 per cent of cases, turned to previously used suppliers without such agreements in another 37 per cent of cases and in 24 per cent of cases turned to a new supplier (see figure 10). According to this, the spot market for competing firms only comprises a quarter of potentially available contracts.

Figure 10. Strategies for outsourcing and purchasing interactive media solutions from other companies.



Source: Augustsson & Sandberg (2004)

Overall figures show quite similar trends for organisations that purchase all of their solutions, with one important difference. The number of organisations that have 'framework agreements' with existing suppliers is lower, 29 per cent, and the ones that turn to existing suppliers without such agreements higher, 41 per cent. One reason for this difference could be that organisations that 'only' purchase interactive media solutions do so less frequently and have (or at least feel they have) less demand for continuous contact with a specific interactive media supplier. Organisations that produce some of their own interactive media solutions, on the other hand, might see it more as an ongoing activity in which contact with competent suppliers is more important. To this should also be added that organisations that produce some of their own solutions are likely to have more knowledge of the nature of such solutions, partially because they have been active users and producers somewhat longer than organisations that purchase solutions, and thereby see benefits of tying qualified companies to them in order to guarantee a continuous supply of competence.

Firms that subcontract production or purchase solutions are overall more likely than government agencies to use previous suppliers, and more often do so without having framework agreements. Although numbers are low, the findings are not surprising given that there are far more rules governing the purchasing process of public sector organisations than firms. All contracts and framework agreements, concerning the average amounts involved in interactive media purchases must be publicly announced and open for bidding to firms according to national and EU regulations.

The Stability of Relations

In order to further pinpoint the extent to which organisations collaborate with specific companies, we asked for the number of firms that they regularly subcontract production to or purchase solutions from, i.e. have stable relations with. The average figures are 1.9 (median of two) for organisations that purchase solutions and 28 on average (median 30) for organisations that also produce interactive media. These findings suggest that organisations that produce some of their own interactive media solutions have a much wider network of companies with which they have stable relations than those who only purchase. The difference is, however, somewhat exaggerated and biased. Although firms that subcontract rather than purchase interactive media most likely do have stable relations to more companies, it is hardly practically possible to have relations with so many firms in the actual production process[31]. A detailed analysis of respondents also shows that a large proportion of those that claim to have stable relations with many actors are newspapers with on-line media solutions. These respondents have probably included free-lance journalists delivering articles or perhaps advertising (content). While they are involved in the process of creating a new on-line edition, they are not involved in the production of the solution itself.

The same question regarding the number of stable relations was also asked in the IM-2001 study. The difference is that in that study, the information only concerns relations to other specialised interactive media producing companies that they either subcontract production to, or work as subcontractor for, not customer organisations. The results showed that the 65 per cent of companies that do outsource production have stable outsourcing relations to 3.4 other companies. The 52 per cent of companies that work as subcontractors to other interactive media companies have stable subcontracting relations to 4.4 other companies.

The results, together with other reported findings, show that there is a hierarchical dimension to the networks based on stable relations between different kinds of firms within the market for interactive media (cf. Sandberg and Augustsson 2002). It is not one single egalitarian network (compare Wasserman and Faust 1994). Instead, some firms tend to have sometimes more, or sometimes less, stable roles as subcontractor, whereas other firms are rather frequently in subcontracting positions (and yet others are left out). In the case of the specialised interactive media firms, we know from the previous IM-2001 study that companies can hold more than one role, both simultaneously and over time, within these networks. They might be in charge of the production and have direct contact with the customer organisation in one project and subcontract parts to other companies, while in other projects they work as a subcontractor to other interactive media firms who in turn communicate directly with customer organisations (see also Sandberg et al forthcoming). Following this, the horizontal and vertical division of labour within and between interactive media

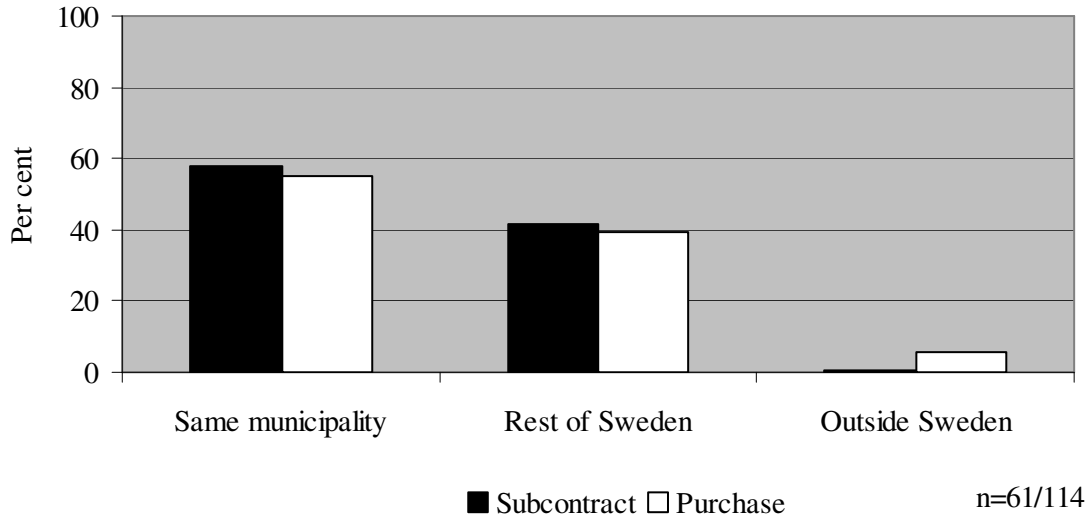
[31] It is likely that some large firms, like car manufacturers, do have stable relations to a large number of subcontractors. It seems less likely that a firm or government agency whose main area of business is not interactive media would have such a vast network of stable relations concerning interactive media production.

producing firms and their customer organisations should be viewed as simultaneously temporal and inertial. It changes over time, but changes are frictional enough to warrant new hierarchical structures to emerge and thereby create differentiated positions (Augustsson 2001).

The Geography of Co-Operation

Besides a division and integration of labour within and between different organisations, production also has geographical aspects. Since interactive media production is a practice that can be (and is) divided between different actors, it is reasonable to assume that the geographical distribution affects its social distribution (White 1992). To get a picture of this, we have measured the proportion of interactive media activities companies subcontract to or purchase from other companies in the same municipality, the rest of Sweden and outside of Sweden (see figure 11). Organisations that produce some of their interactive media themselves subcontract 59 per cent of their interactive media production in the same municipality, 41 per cent in the rest of Sweden and practically nothing abroad. Equivalent figures for organisations that purchase all of their interactive media solutions is 55 per cent in the same municipality, 40 in the rest of Sweden and five per cent abroad. This can be compared to the geography of specialised interactive media companies' subcontracting from the IM-2001 survey: 72 per cent in the same municipality, 22 per cent in the rest of Sweden and six per cent outside Sweden. In the prior study, we also have figures on the geographical location of the companies that specialised interactive media producers work as subcontractor for: 67 per cent in the same municipality, 28 per cent in the rest of Sweden and five per cent abroad.

Figure 11 The geographical location of subcontracted or purchased interactive media activities.



Source: Augustsson & Sandberg (2004)

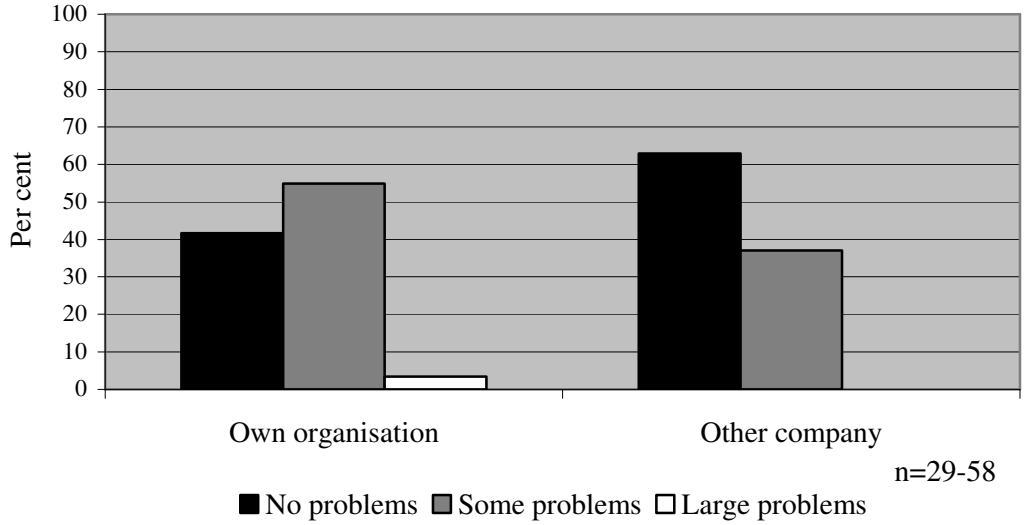
When taken together, these findings reveal an interesting pattern. As we know from previous studies, specialised interactive media producing companies are geographically clustered (Braczyk et al. 1999), in Sweden mainly in downtown Stockholm and other larger cities (Sandberg 1999). It further appears they are more clustered around each other than around their customers, i.e. the organisations that subcontract or purchase interactive media solutions. While larger organisations in general are represented in all parts of Sweden (although somewhat concentrated to larger cities), interactive media producing firms are to a large extent clustered around a few major Swedish cities. There is a slight anomaly in this pattern: organisations that produce some of their own interactive media solutions tend to have a somewhat higher proportion of collaborating partners in the same municipality than those who purchase everything. Although the empirical support for a slightly larger concentration of specialised interactive media producers around subcontracting organisations than around 'simply' purchasing organisations is weak, it does seem reasonable. Hypothetically, such a difference might be due to the need for closer and more continuous contacts[32]. This is supported by the number of companies organisations with internal production have stable relations with, as compared to organisations that purchase solutions, and by the higher incidence of framework agreements. Firms tend to centre geographically around customer organisations, but the extent of 'customer-clustering' seems to be dependent on the type of relation and collaboration.

Dependencies

The type of contracts and the existence of stable relations reported above give an insight into formal agreements and the frequency of contacts between companies. It does not, however, show the importance of the connections and the relative dependencies between the parties. To gain a picture of this, we asked respondents how their interactive media operations would be effected if the companies they have stable relations to (meaning repeatedly use) would cease to collaborate with them. Simultaneously, we asked them to predict how their collaborating partners would be effected if their organisation stopped hiring them. The same question was asked both to organisations that produce interactive media and those that purchase such solutions (see figure 12). This is just one of several possible estimates, but in our view superior to simply assuming that firms are dependent on each other or that subcontractors and smaller organisations are generally the more dependent party. Managers' interpretations of how they and their collaborators will be effected if co-operations cease is likely to have an impact on their actual behaviour/actions, as well as feelings of dependence. If you know that you will face serious problems if your collaborating partners stop working with you, you are likely to cut them some slack in some cases.

[32] This is one of the strengths of hierarchies, as compared to markets and networks: when processes are handled according to bureaucratic rules rather than based on social and/or market relations, geographical distance is less of a problem, since the procedure is standardised (Perrow 1986; Augustsson and Sandberg 2003a).

Figure 12. Estimates of problems for the own organisations and the companies it subcontracts to or purchase interactive media from, if collaborations would cease.



Source: Augustsson & Sandberg (2004)

A large proportion of organisations in the present study, 42 per cent on average, estimate that they will not face any problems if their subcontractors stop collaborating with them, they would find other partners. But an even larger proportion, 58 per cent, believe that they will face either some or extensive problems if their subcontractors cease to take on their work.

37 per cent of respondents believe that the companies they subcontract production to will face some problems if they stop hiring them and no organisations believe the problems for the other companies will be extensive. This means that 63 per cent of companies believe that their subcontractors would not face any problem at all if they stop using them. It should be noted that a large proportion of respondents were unable to estimate the consequences for the other companies[33]. Still, organisations seem to feel more dependent on the companies that supply them with interactive media solutions than they believe the other company is dependent on them as customer. This goes against the traditional view of dependencies between organisations, where subcontractors are generally believed to be more dependent on their customer organisations due to, among other things, differences in size and resources[34]. The size or economic resources of companies is not, however, the only thing that effects felt dependencies between companies. Smaller companies might have strategic knowledge that the larger company lacks (in itself a kind of resource, Sandberg and Augustsson 2002). But if there are alternative companies that can supply similar knowledge, this difference is inconsequential. Given the financial problems many specialised interactive media companies experienced during 2001 (the time of the survey), it

[33] If the 'do not know' category is included, figures drop to 49 per cent who believe the other companies will have no problems and 29 per cent who believe they will face some problems.

[34] An exception to this is where the supplier has a monopoly or oligarchic position and hence can dictate the terms of trade.

would seem that organisations would have little problem finding alternative suppliers who would gladly accept them as customers.

A reason for this felt dependence might be that organisations believe their suppliers have valuable competencies and knowledge about their specific interactive media operations that others companies lack. There might be other companies that have the same competence within interactive media production in general, but none who have detailed knowledge about the actual solution the organisation uses and needs. The importance of having detailed experience of a particular interactive media solution compared to interactive media competence in general might in reality not be that great; it is enough if organisations that subcontract or purchase interactive media solutions are convinced that this is the case.

Respondents' high valuation of experience of particular solutions compared to general competence levels within interactive media (whether this is accurate or not) would partially explain why organisations that produce some of their own interactive media and outsource other parts feel more dependent on the other company. They are not only buying a readymade commodity that they could purchase from someone else, but also actively collaborating with a number of other firms in the actual development and production of the solutions to be used. In both cases, the collaboration is most often specified in formal contracts that include costs for breach of contract. But contracts become more complex to construct and monitor if all parties are actively engaged in projects. All possibilities cannot be covered, which means that some degree of shared understanding, trust and dependence between actors is inherently involved (compare Durkheim 1893/1984; Lin 2001). Further, organisations that handle some of their own production internally can be thought to have greater in-depth knowledge of their own activities, implying that having this specific experience is in fact important.

Although actual numbers are low, comparisons between the earlier IM-2001 study and the present IMSO-2002 study are interesting. The same question was also asked to companies that either subcontract or work as subcontractor to other companies in the IM-2001 survey. There, we found that companies felt slightly more dependent in the role as subcontractor, compared to when they subcontract activities, but overall they viewed both parties as quite independent. The specialised interactive media producers' felt relative independence from the companies they collaborate with might be explained by the flexible specialisation that characterises these companies and their knowledge of the market: they know they have the competence to perform many of the functions they outsource, and if they cannot do it themselves, they know which other companies can. Their knowledge of the interactive media market lowers their dependence on particular other companies.

Concluding Remarks

The findings presented throughout this section of the report show that the whole market for interactive media, including specialised interactive media producers, organisations that produce whole or parts of their solutions internally and organisations that purchase all solutions they use, is characterised by a certain degree

of ongoing informal and formal relations between different organisations. But it is also clear that the number of relations, as well as their degree of formality and geographical concentration, differ depending on whether organisations produce or purchase internal interactive solutions.

On the production side, i.e. specialised interactive media producers, there are fewer collaborating partners, organisations have more stable relations to them, and they are more geographically concentrated.

On the consumer side, on the other hand, we find two (or three) different types of organisations. First, those organisations that produce some of their interactive media themselves have a high number of stable relations to other companies and ongoing formal agreements with a large proportion of them, their partners are geographically quite close and they regard themselves as rather dependent on their competence. The organisations that produce some of their own interactive media solutions are interwoven in production networks that include a number of specialised interactive media companies, as well as other firms active within the field (advertising bureaux, graphics firms, IT consultants, etc.). This brings with it possibilities of competence development, but also increased costs of co-ordination and the possible negative effects of being dependent on external actors (Alter and Hage 1993). These organisations are not only early, but also deeper, adopters of interactive media.

Second, organisations that purchase all their interactive media solutions have a number of unstable, but very few stable, relations to other actors, formal agreements in fewer instances (although they often use the same supplier), are slightly less geographically close to their suppliers and regard themselves as somewhat less dependent on them. Organisations that purchase all of their interactive media solutions are not part of tight production networks, rather handling their operations at arms length. Interactive media solutions are more of a commodity or service like any other.

A third group of organisations active within the market for interactive media consists of those that perform all of their own interactive media operations. Although they are more deeply involved in interactive media than the former two types of organisations since they do everything themselves, they are paradoxically the most isolated since they lack stable relations to other interactive media companies, do not collaborate on production and are not part of any production networks.

7. Why Produce, Subcontract or Buy Everything?

The results so far show the interactive media activities that organisations perform themselves, those that they subcontract to or purchase from other companies and what type of companies they collaborate with. Furthermore, results have been presented regarding the strategy used to find partners, the type of contracts used, as well as geographical and dependency relations to the other companies. Here, we look at the reasons why some firms choose to handle their interactive media operations internally, why some choose to subcontract them and why some purchase complete solutions. In the subsequent section we look at how satisfied organisations are with the services

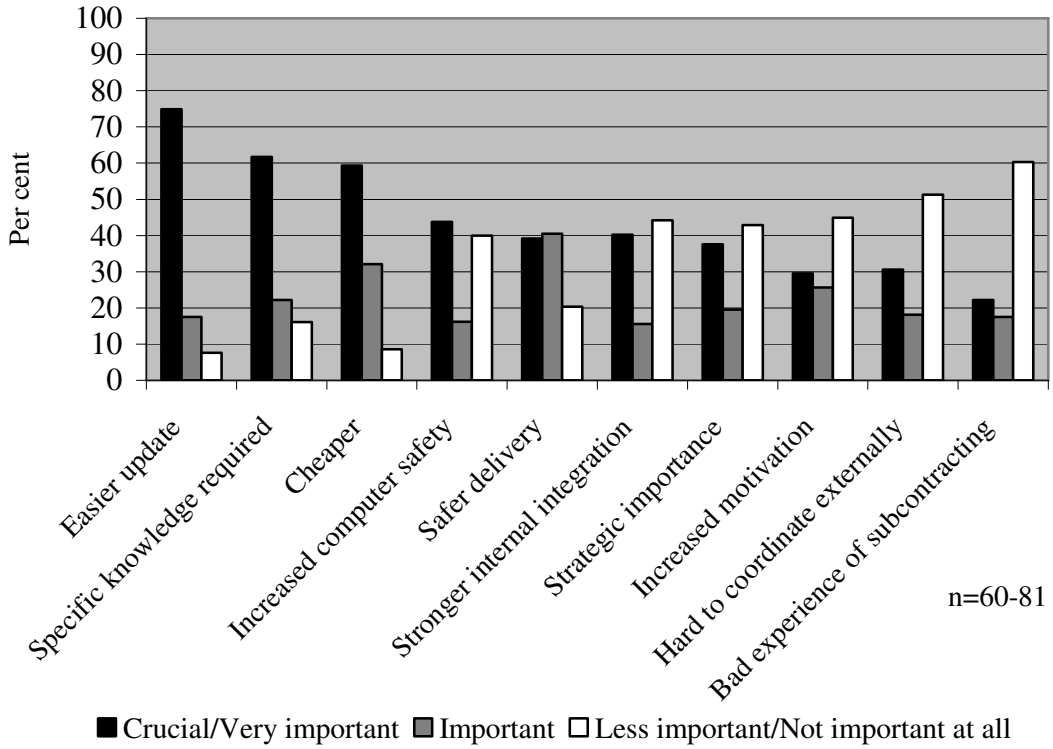
they gained through subcontracting and purchase, as well as the resulting solutions in total. Taken together, these factors show the reasons why organisations have chosen to handle their interactive media operations in a certain way, how satisfied they are with the current organisation and their actual interactive media solutions, i.e. the results.

All organisations were asked to rank the relative importance of a number of factors in the decision behind their current organisation of interactive media production. Thus, organisations that handle all their production internally were asked why they do not subcontract, organisations that subcontract parts of their production were asked why they subcontract some parts, and organisations that purchase complete solutions were asked the relative importance of different factors in their decision not to produce anything themselves. The results are shown in figures 13-15 below.

Reasons for Producing All

For organisations that handle all of their interactive media operations internally, the most important reasons not to subcontract them are the simplicity of updating, the need for in-depth knowledge of the organisation's business, the view that production can be handled more cheaply internally, and increased security against hackers and computer viruses. All these rank as crucial or very important in more than 40 per cent of organisations (see figure 13).

Figure 13. The relative importance of different factors in organisations' decisions to produce all of their interactive media solutions themselves.



Source: Augustsson & Sandberg (2004)

These reasons represent quite different concerns: ease, knowledge, cost and security. The same organisational solution, to produce all interactive media internally, has alternative causes both within the same organisation, and also between organisations[35].

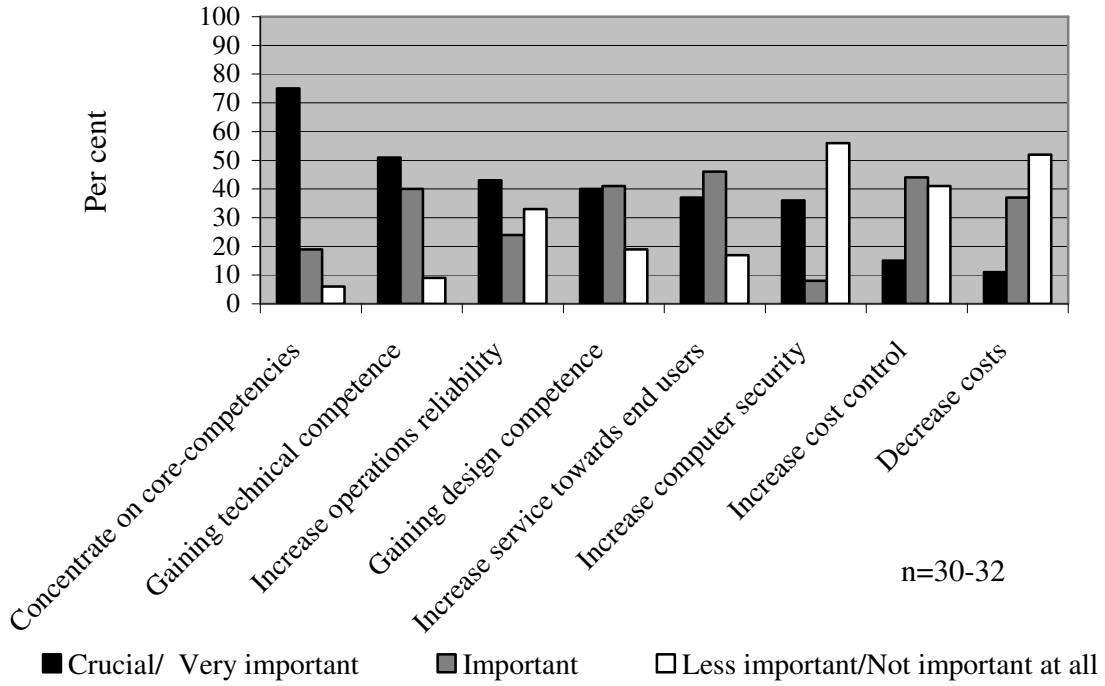
The least important factors for producing interactive media in-house are problems of co-ordinating external subcontractors with internal interactive media operations, and bad experience of previous subcontracting. Several factors are of no importance whatsoever for the choice not to subcontract interactive media production among a large proportion of organisations. Previous bad experience of subcontracting is of no importance to almost 30 per cent of organisations (perhaps because not having such experiences). Competitive advantages, problems of co-ordinating external companies with internal interactive media operations, less effective internal integration of functions and security aspects are all of no importance to roughly between 15 and 20 per cent of organisations. Thus, what are important factors for some organisations is of no concern to others.

Reasons for Subcontracting Parts

The most important factors influencing organisations' choice to subcontract parts of their interactive media production to external companies are the possibility to focus on the organisation's core competencies, to acquire external technical competence and better operating security, all ranking as crucial or very important factors for 40 per cent of organisations or more (figure 14). The ability to concentrate on core competencies is an especially important factor. Less than five per cent of organisations view that as a factor of little or no importance. The findings suggest that contemporary management ideas regarding the need for organisations to concentrate on their core competencies have had an impact in a vast majority of organisations, both firms and government agencies (Furusten 1994; Sandberg 2003b). This is also reflected among organisations that purchase everything. Concentration on core competencies can also be an acceptable motive to legitimise choices that have other, or perhaps no, well thought out reasons.

[35] Computer and IT related security aspects seem to have become of increased concern to organisations since the time of measurement, based on media coverage. But it is uncertain how this affects organisations' decision of how to organise their interactive media operations. It might be that they become more willing to turn to experts on computer and IT related security and perhaps this particular activity is subcontracted. Organisations might also become less willing to let outsiders into their IT systems and hence handle more of it themselves.

Figure 14. The relative importance of different factors for organisations that handle some of their own interactive media operations in their decision to subcontract parts of their production.



Source: Augustsson & Sandberg (2004)

Less important factors are security, increased cost control and decreased costs for interactive media operations. Overall, the importance attributed to different factors is rather high. Few factors on average seem to be of no importance whatsoever in relation to outsourcing production. The exception is security aspects and decreased costs, which half view as of little or no importance for their decision to subcontract parts of their interactive media production.

The importance of different factors varies somewhat between companies and government agencies, which indicate that they have diverse reasons to subcontract part of their production. More often than companies, government organisations emphasise the possibilities to increase the service towards end users and decrease the cost of interactive media operations. The importance of end users probably reflects the importance that has been given to the development of the '24 hour government agency', an attempt to increase citizens' opportunities to contact authorities online; on the Internet and via e-mail. Thus, the end users here mainly would refer to external 'customers' (i.e. citizens) and not the employees working within the government agencies, a view also expressed in a recent government investigation (SOU 2003:55). The relative importance given to decreasing costs may be a sign that government agencies believe it will be cheaper to fulfil this vision by subcontracting certain parts of production to companies, rather than expand their own organisation by keeping it internally. Still, many government agencies do choose to organise certain parts in-house, rather than purchase all their interactive media on the market.

Companies, on the other hand, place a greater emphasis than government agencies on the possibilities of increasing operations reliability by subcontracting parts of their production. As part of IT solutions, interactive media is becoming more important for the functioning of organisations, which makes operational reliability an important factor for a growing number of firms: when the IT system breaks down production halts and there is often not much work employees can do (Ward and Peppard 2002). A hypothetical, but not unlikely, reason why operational reliability is seen as an important factor for a larger proportion of companies than government organisations is that the financial costs of a break-down are more apparent in companies[36]. As a result, companies subcontract vital aspects of interactive media production to external experts to a larger extent than government agencies in order to avoid production disturbances.

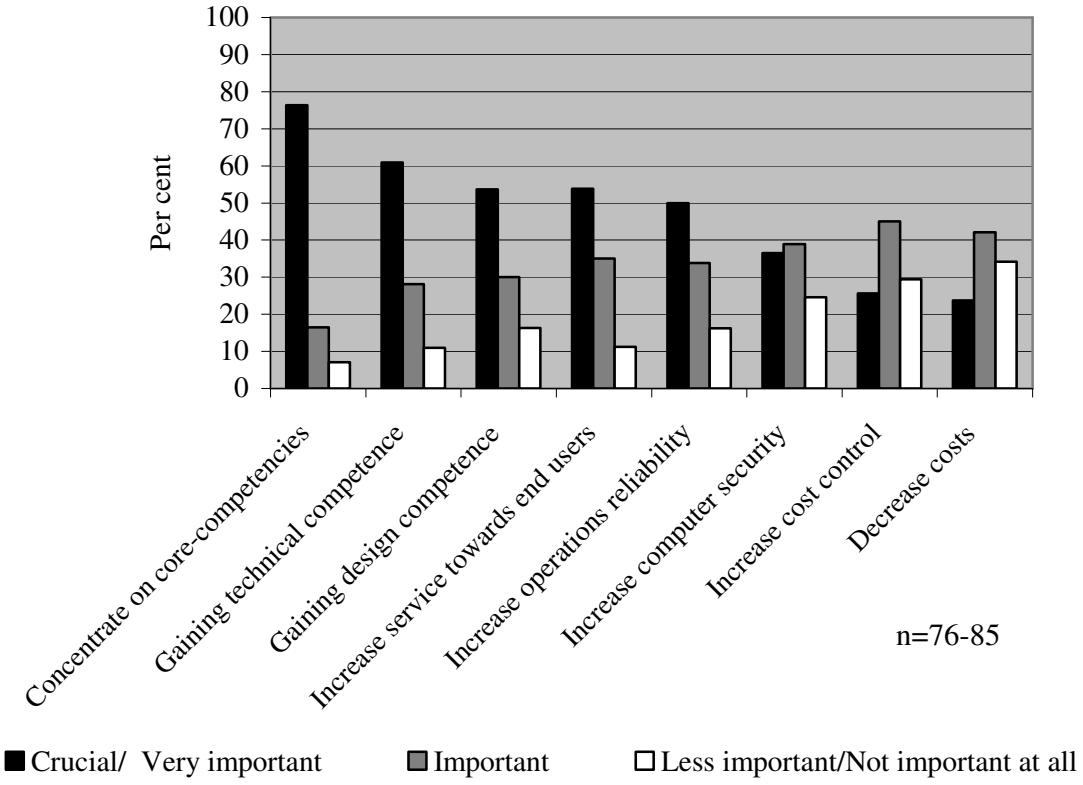
Reasons for Purchasing All

The main reasons why some organisations choose not to produce interactive media solutions internally, but rather purchase them, are the ability to focus on the core competencies of the organisation, the acquisition of technical and design competence and improvements for end users, all ranking as crucial or very important factors for more than 50 per cent of organisations. Control over and lowering of the costs of interactive media operations, and security aspects, are of less importance (figure 15).

Overall, it seems that the factors that are important in the decision to keep interactive media operations internally are somewhat different from the factors behind the decision to purchase complete solutions from external actors. Or, put differently, the importance of different factors varies between organisations and this affects their choice to either produce all or parts, or purchase interactive media solutions. Organisations that handle all of their operations internally point to the possibility of having control over the handling of the solution and the problems of subcontracting operations to external actors who may have less knowledge about the business of the organisation. These organisations seem to have less need to acquire external competence, probably because they have gained such competence through their own internal handling of interactive media.

[36] The loss in terms of production, i.e. work being carried out, due to low operational reliability might be the same for government agencies and companies. But in companies it is directly seen in terms of decreased production and/or sales. Government agencies, on the other hand, 'only' have to deal with delays and aggravated citizens.

Figure 15. The relative importance of different factors for organisations that purchase interactive media solutions in the decision not to handle production themselves.



Source: Augustsson & Sandberg (2004)

Organisations that subcontract parts of their interactive media operations or purchase all of it have some similarities. Both types of organisation strongly emphasise the importance of focusing on their core competencies, apparently not including the production of interactive media. They also stress the value of acquiring external technical and design competence, partially in order to improve the security and smooth operations of their interactive media solutions. These organisations do not have sufficient knowledge to produce all parts of interactive media solutions, they do not view such knowledge as their core competence, and hence they turn to external companies to obtain solutions that work properly.

The earlier described segregation of interactive media is visible here as well. Some organisations choose to handle all of their operations internally and have obtained the necessary knowledge to do so. Others view interactive media as an additional function that they do not wish to focus on and hence have not acquired internal competence to handle, at least not in full. The latter types of organisation seem more willing to accept the cost for this, both economically and in terms of security.

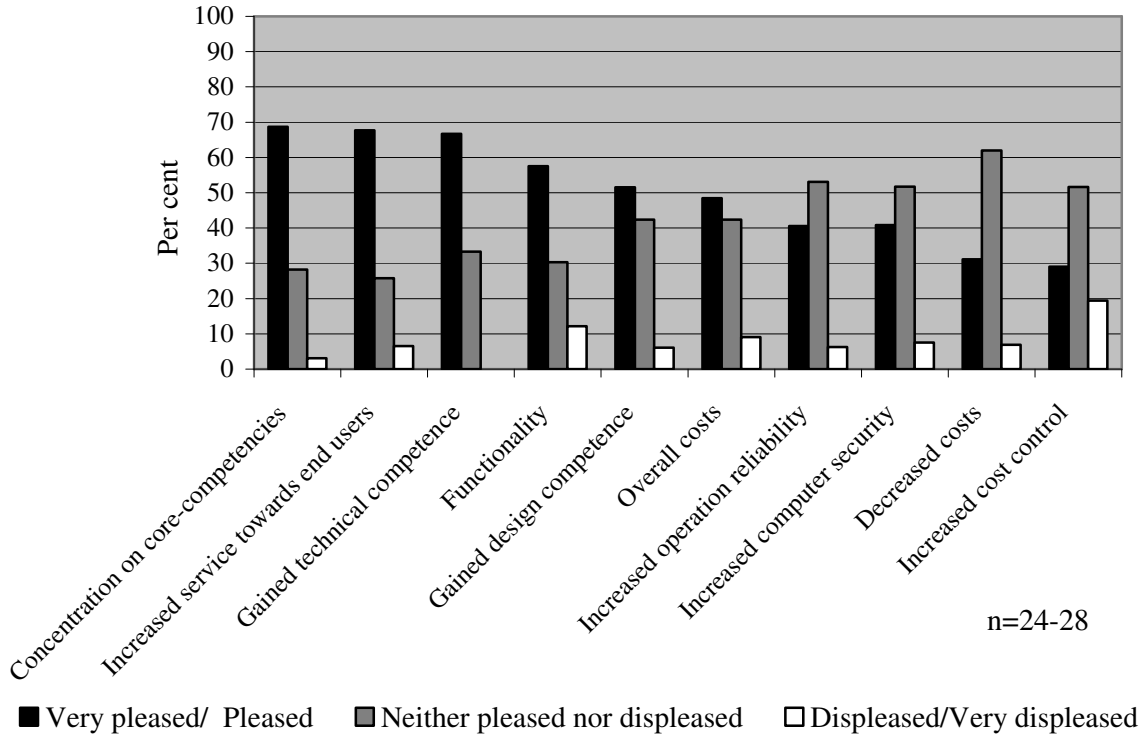
8. Satisfaction with Subcontracting and Purchase

Several studies have shown that a large proportion of organisations are dissatisfied with their IT operations, including interactive media solutions (cf. Mähring 2002). The costs often become higher than initially expected and the functionality of the solution lower; organisations sometimes pay more for less, to put it plainly. There is reason to be cautious of some of these results since they often are produced and published by IT consulting firms that have an obvious interest in overstating problems in order to legitimise their existence and convince companies to purchase their services. Still, the subcontracting and purchase of interactive media solutions is complex and it is well known that neither producers nor customers always perceive it as a smooth process without problems (Ward and Peppard 2002).

Satisfaction with Different Aspects

Organisations were asked how satisfied they were with the results the last time they either subcontracted parts of their interactive media production or purchased a whole solution. Satisfaction was investigated using the same factors as when measuring the reasons behind organisations' choice of how to organise their interactive media operations (see figures 16 and 17)[37].

Figure 16. Satisfaction with different aspects of the result in the most recent subcontracted interactive media solution.



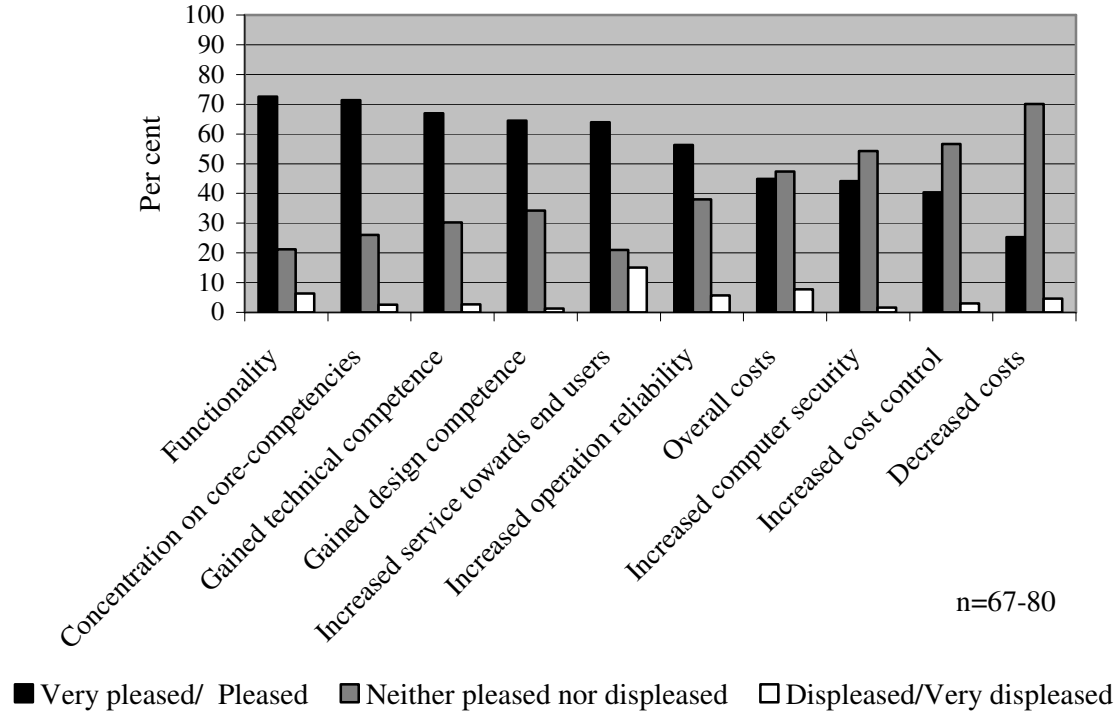
Source: Augustsson & Sandberg (2004)

[37] The question was not asked to organisations that handle all their interactive media production internally.

The aspects of subcontracting that organisations are most satisfied with are increased service towards end users, technical competence, the possibility to focus on their own core competencies and the functionality of the solution. Roughly 60 per cent or more of organisations were very pleased or pleased with these aspects. Although these are the factors organisations are most pleased with, the proportions are not impressive; up to 30 per cent are *not* satisfied with these aspects. Organisations are less pleased with matters of cost. Although 51 per cent are pleased or very pleased with the overall cost of the actual interactive media solution, only about a third feel the same about the lowering and control of the costs for their interactive media operations. Thus, although the solution purchased is in half of cases within acceptable limits from the point of view of the customers, its effects in terms of lowering the organisations' cost of interactive media operations is not as good.

The same pattern can be observed among organisations that purchase complete interactive media solutions in figure 17: a large proportion of companies are pleased with the functionality of the solution and the improvement for end users that it contributed to, the possibility to focus on their core competencies, and the technical and design competence they received; roughly 60 per cent or more of organisations were either pleased or very pleased with these aspects of their latest purchased interactive media solution. Again, they are less pleased with costs: only 45 per cent are pleased or very pleased with overall costs, 40 per cent with cost control (no organisation was very pleased) and as few as 25 per cent are satisfied with the lowering of costs for their interactive media operations.

Figure 17. Satisfaction with different aspects of the result in the most recent interactive media solution purchased.



Source: Augustsson & Sandberg (2004)

The relatively high proportion of organisations dissatisfied with cost related aspects of subcontracting and purchasing interactive media solutions could have two reasons. Either customers have unrealistic expectations, or the services they receive are not of an acceptable standard. Earlier research has shown that many customers of IT solutions expect too much in terms of lowering of costs. A reason might be the so-called Solow Paradox, that computers (and IT) are visible everywhere, except in productivity statistics (Lundgren and Wirberg 1997). At the same time, there were a number of 'gold-diggers' that entered the Swedish market for interactive media production during its booming years, hoping to make a fortune although not always having sufficient competence. It is most likely a combination of high expectations, problems of measuring increased productivity, and some firm's limited competence that explain the relatively high levels of dissatisfaction

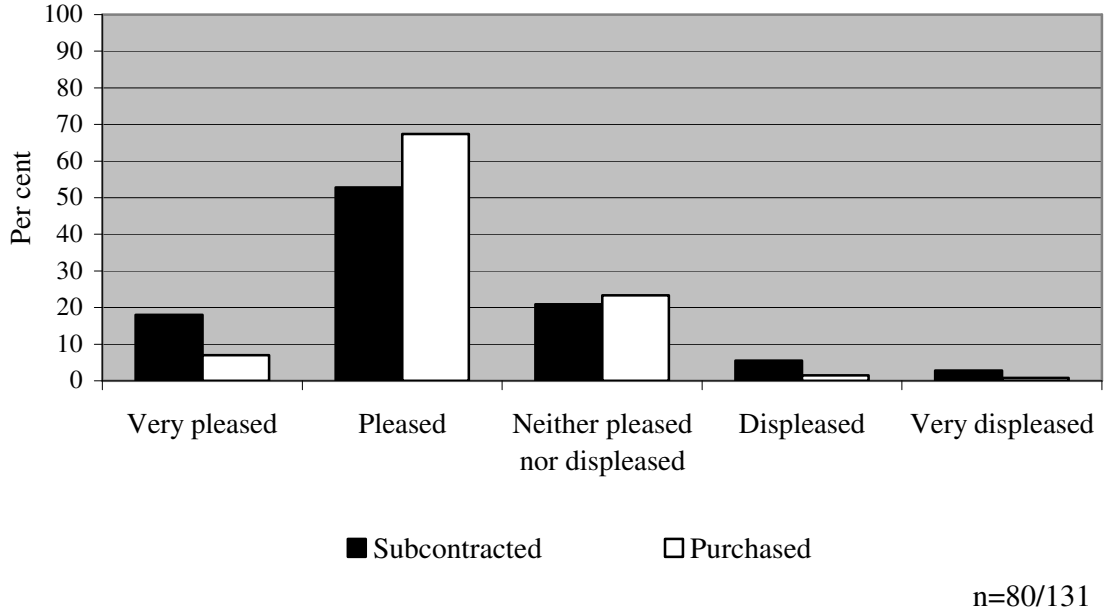
An important factor for organisations in their choice to either subcontract or purchase interactive media is to be able to concentrate on their core competencies and still receive a functional solution by acquiring external competence. In this respect, organisations have few complaints (figure 17). What they do feel less satisfied with is the cost of such solutions, and not only the overall cost, but also the possibility to keep control over the costs of interactive media operations, or to potentially lower them.

Overall Satisfaction

Organisations that subcontract part of their production were also asked how pleased they were overall with the most recent interactive media solution they obtained. 18 per cent were very pleased, 53 per cent were pleased, 21 per cent neither pleased nor displeased and eight per cent displeased or very displeased. An average of seven per cent of organisations that purchased a complete interactive media solution were very pleased, 66 per cent were pleased, 23 per cent were neither pleased nor displeased and less than three per cent were displeased or very displeased (see figure 18).

Although organisations seem dissatisfied with particular aspects of the interactive media solutions they obtain through subcontracting and purchase most of them seem satisfied overall with their latest interactive media solution. The importance of different factors and the satisfaction with them in the last solution are probably dialectically related to each other. You realise what is important when it does not work the way you thought and that is what you then try to avoid in the future, either by specifying contracts, changing partners or changing the overall organisation of interactive media production and operations. These changes are dealt with next.

Figure 18. Overall satisfaction with the latest interactive media solution organisations sub-contracted or purchased.



n=80/131

Source: Augustsson & Sandberg (2004)

9. Changes in Interactive Media Operations

Almost by default, individual surveys give a snapshot picture of that which is studied. To get a picture of changes often requires longitudinal analyses, i.e. a series of surveys directed at the same population or cohort of organisations. This is of course not possible here since this is the first national survey of in-house interactive media operations in Sweden. Still, issues of change and future trends are among the most interesting, especially concerning activities with a brief history such as IT and interactive media (Augustsson and Sandberg 2003b). Studies repeatedly show that it is during the early years of new practices that changes are particularly dynamic, both concerning the starting and closure of specialised firms and in terms of growth in in-house production. Over time, there is usually more stability, at least momentarily until new factors cause changes again (Carroll and Hannan 1995; Aldrich and Fiol 1994; Aldrich 1999). It has been argued that we have now reached a period in time where these changing conditions are becoming more frequent, leading to a situation of increased, or even constant structural changes. The empirical evidence for increased changes (both in terms of frequency and scope) are limited and partially contradictory Sandberg 2003b; Wikman 2003). Furthermore, it is still too early to determine whether these changes are temporal, perhaps due to an overall change in the organisation and functioning of the economy and society, or if it constitutes a lasting condition.

To facilitate analyses of changes, we asked respondents to describe their interactive media operations one year prior to the study and estimate what it would look like twelve months ahead. This method has well known limitations due to the cognitive limits of respondents (unreliable memory, wishful thinking, etc.). Yet, it provides

valuable information for the present and future surveys since historical descriptions and future estimations can be compared to (respondents estimates of) actual levels.

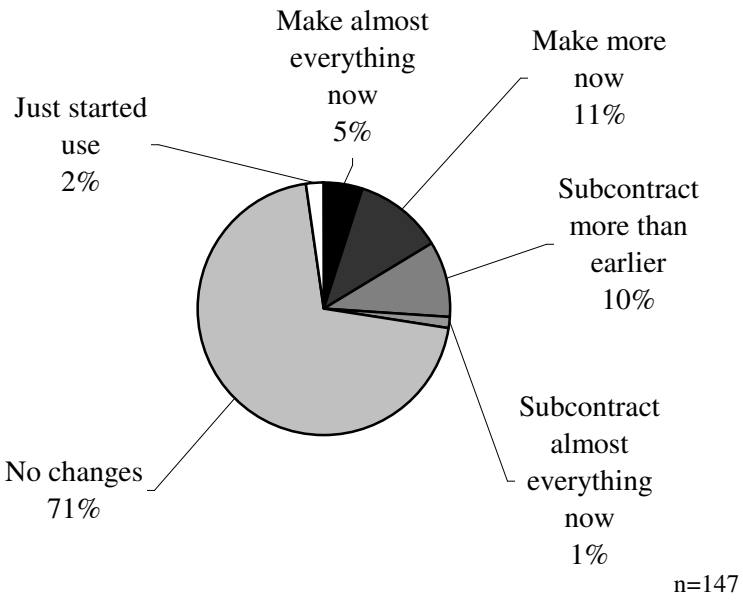
Changes in the way organisations handle their interactive media operations are interesting in order to determine the stability of the current situation, as well as providing indications of the future development of interactive media within organisations. Are early adopters of interactive media solutions more likely to be producers in the future as well, or will organisations that started using interactive media later catch up with them in terms of production? In other words, are the observed differences between deep and arms-length users of interactive media an age or cohort effect?

Given the mentioned methodological limitations inherent in asking respondents for their estimations of prior and future changes, as compared to conducting longitudinal surveys (i.e. repeatedly asking respondents only about the present situation), as well as the relatively limited number of respondents, the results should be treated as indicators of changes and possible trends, rather than precise predictions of developments.

Previous Changes

Organisations that produce all or parts of their interactive media solutions in-house were asked what changes they had made in their interactive media operations during the last twelve months (roughly from late 2000 to late 2001). To recollect, these organisations on average started their production and use in 1997, meaning that the majority of them had already had interactive media operations for a couple of years. The results, presented in figure 19, show that two per cent of organisations did not use interactive media at all twelve months ago but do now, i.e. they have just started. This is in line with the results presented in chapter one concerning when organisations started their use and production of interactive media; the proportion of organisations that started their production 2000 or after is very low, a development that is similar for the starting year of purchase, only with some time-lag. The proportion of organisations that have become more involved in interactive media operations by producing more or almost everything internally is slightly higher than the proportion of organisations that subcontract more or almost everything, 16 compared to eleven per cent. Although figures are low, we see that there are more organisations that have decided to do almost everything now than there are organisations that have moved in the other direction and decided to outsource almost everything; the former organisations account for practically all of the increase. The majority of organisations have, however, made no changes whatsoever concerning their organisation of interactive media operations in the previous year.

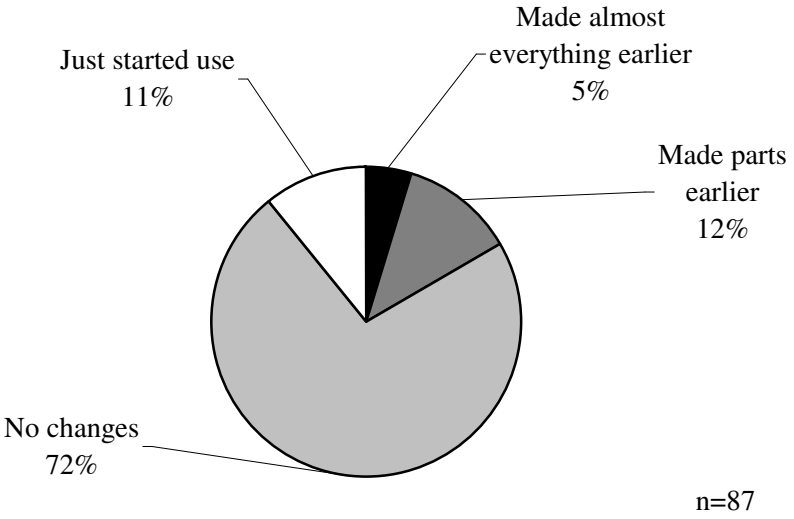
Figure 19. Changes in production and subcontracting of interactive media solutions since 2000 among organisations that produce all or parts in 2001.



Source: Augustsson & Sandberg (2004)

The results concerning organisations that purchase all of their interactive media solutions in 2001 are similar, 72 per cent have made no changes in their organisation in the twelve months prior to the survey (figure 20). Interesting to note, and in line with previous discussions, is that the proportion of organisations that have just started their use of interactive media is considerably higher among organisations that in 2001 purchase all of their solutions than among organisations that produce all or parts of it internally. This further shows that early adopters are more involved in interactive media production than later ones, at least at the moment. We also see that 17 per cent of organisations have previously produced interactive media in-house but ceased doing so in the last twelve months. Thus, almost one fifth of organisations that purchase interactive media have outsourced production. This proofs that there are so-called backward developments, with some organisations lowering their involvement in interactive media production (although not having stopped *using* interactive media solutions). In five per cent of cases, organisations have gone from doing almost all of their interactive media production internally to purchasing all of it over a period of just one year. These figures can be compared to the results in figure 19, which show that 16 per cent of organisations have insourced all or parts of their production, meaning the aggregate proportion of organisations that produce and purchase interactive media, respectively, has not changed in the previous twelve months according to respondents.

Figure 20. Changes in production and subcontracting of interactive media solutions since 2000 among organisations that purchase everything in 2001.



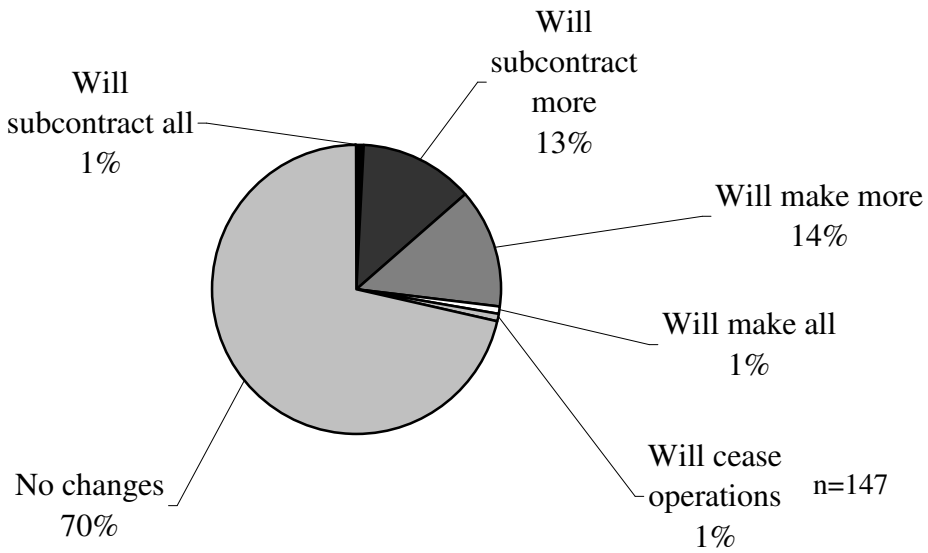
Source: Augustsson & Sandberg (2004)

Estimated Future Changes

When asked how organisations thought their interactive media operations and number of employees would change in the coming twelve months (roughly from the beginning to end of 2002), the following results where reported: less than one per cent thought they would subcontract all production, 13 per cent thought they would subcontract more than today (i.e. outsource), 14 said they are going to produce more themselves and less than one per cent that they are going to produce everything themselves. Less than one per cent thought they would stop using interactive media all together and 70 per cent will not make any changes at all (see figure 21).

Thus, 30 per cent of the organisations that produce all or parts of their interactive media in-house intend to make changes in the organisation of their operations in the coming twelve months, corresponding roughly to 2002. Interesting to see is that this seems to give little net effect in terms of the number of organisations with in-house production: almost exactly the same number of organisations intend to increase and decrease their interactive media operations.

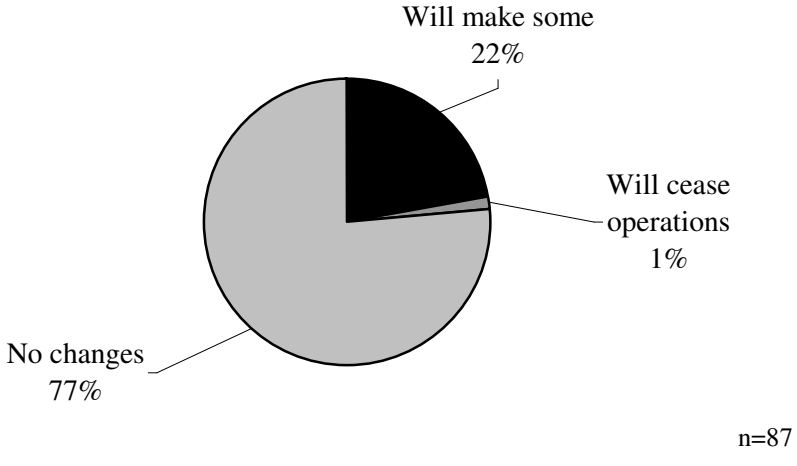
Figure 21. Estimates of how production and subcontracting of interactive media solutions will change in the coming twelve months (until 2003) among organisations that produce all or parts of their interactive media solutions in 2001.



Source: Augustsson & Sandberg (2004)

If an analysis based on industrial demographics had been used there would be no sign of changes in the size of the organisational population since the aggregate net effect would be close to zero (Carroll and Hannan 1995). This would prevent the detection of industrial dynamics and movements in and out of the population, e.g. organisations performing a certain practice (Aldrich 1994; 1999). Further, these results suggest that the major reason behind the changes is in this case not the establishment and closure (birth and death) of organisations, but changes in their internal operations.

Figure 22. Estimates of how production and subcontracting of interactive media solutions will change in the coming twelve months (until 2003) among organisations that purchase everything in 2001



Source: Augustsson & Sandberg (2004)

Very few organisations that purchase and use interactive media solutions intend to decrease their involvement; less than one per cent (referring to only one organisation) intend to cease their interactive media operations, in other words stop using interactive media altogether (figure 22). A large proportion, 22 per cent, intend to increase their involvement by starting to produce some of their interactive media internally. If these predictions are correct, it would mean that roughly 150 Swedish organisations with more than 200 employees that previously did not produce interactive media in-house intended to do so during 2002.

Overall, the figures show that in-house production of interactive media was supposed to increase slightly between 2000 and 2003. These findings should be related to the results on changes in the amount organisations estimate that they will subcontract interactive media production and purchase solutions, as well as changes in the number of employees. In recollection, estimations were that the value of subcontracting and purchasing would go up a modest five per cent between 2001 and 2002. This means that there is a simultaneous growth in both in-house production and the interactive media solutions that organisations will subcontract to or purchase from other firms, mostly specialised interactive media producing companies in Sweden.

There is a positive correlation between the changes organisations have made in the prior twelve months and the changes they expect to make in the coming year. Organisations that have decreased their involvement in the immediate past intend to continue doing so in the near future. Vice versa, those organisations that have increased involvement before estimate they will continue on that path. Companies generally have made and will make more changes than government agencies and they plan to increase their interactive media operations to a larger extent. However, as the figures above show the majority of respondents claim that no changes either have been or will be made. Further, the number of respondents is limited, making predictions uncertain. The findings should be regarded as possible trends, rather than precise predictions. Still, no available information from other sources has so far contradicted the trends based on the survey results that we present here.

The reported changes further indicates that there may be an emerging polarisation among larger Swedish organisations concerning their interactive media operations, with some being extensive users and producers and increasing their operations, and others being more limited users and producers and delimiting their involvement in interactive media. Still, the majority of organisations seem decided on the organisation of their interactive media operations, despite the activity's short history, and make few changes. This at least accounts for the year previous to, as well as after, the time of the survey. As in the case of changes in the number of employees working with interactive media, one should be aware of the possibilities of trend forecasting; that respondents see no reason why things should change and hence think development will continue in the same direction as before (compare Augustsson and Sandberg 2003a).

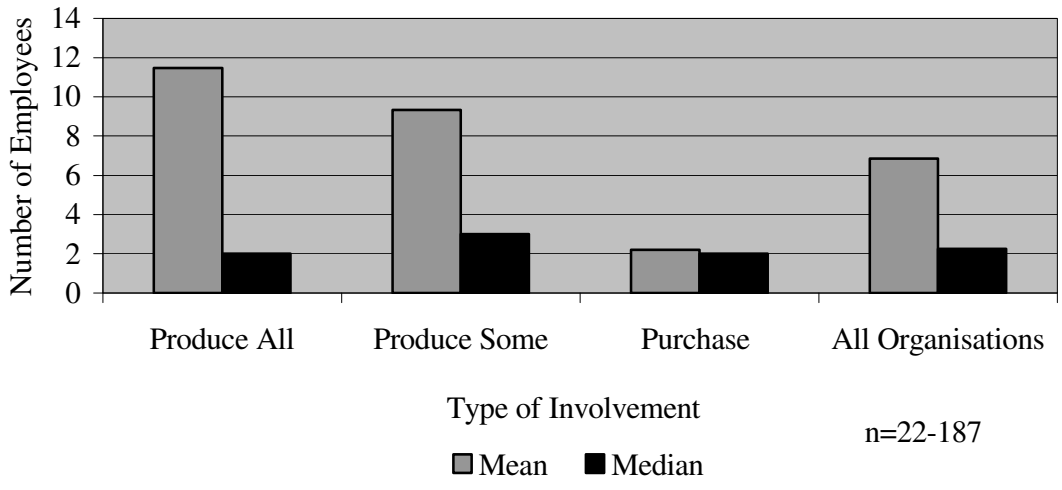
Concluding Remarks

To conclude and partially answer the question set out in the beginning of this report, regarding whether we are witnessing a movement away from specialised interactive media producing companies and an increase in in-house production: the results here indicate that there is a very modest and uncertain movement in that direction, but that the general situation is one of relative stability at the aggregate level. This further supports the notion that some organisations have chosen to get deeply involved in interactive media, while others see it as a complementary activity. It seems that both will continue on their respective paths. Yet, it should not be neglected that a considerable proportion of organisations have made and intend to make changes in the organisation of their interactive media operations. The early adopters of interactive media are more deeply involved and there is reason to believe that this difference will largely persist and perhaps increase, although some of the late adopters have increased their involvement over time. There will most likely not be a future situation of either complete in-house production (which would mean the end for a large proportion of specialised interactive media producing firms), or outsourcing of all activities to specialised firms; both are likely to co-exist side by side and continue to have relations with each other.

10. Personnel

The average Swedish organisation that produces some interactive media solutions in-house have 9.3 employees working with interactive media operations, those that produce all in-house 11.5 and organisations that purchase all such solutions just above 2.2. Median figures for all groups are lower; two, three and two respectively (see figure 23).

Figure 23. Average number of employees working with in-house interactive media operations in organisations with different types of involvement.



Source: Augustsson & Sandberg (2004)

Over time, this is an increase in the number of employees producing all or some interactive media in-house from 4.5 in 1998 to 6.9 in 2000. Regarding employees that maintain and order interactive media solutions internally, we see an increase from 0.9 in 1998 to 1.8 in 2000.

The number of employees working with interactive media in organisations that produce all or some of their interactive media internally is higher than in specialised interactive media producing companies who have, on average, 16 employees, eight of which are involved in the actual production of interactive media. Median figures for the latter type of company are five, of which three focus on actual production. This is more or less equal to the number of employees in in-house production. As shown earlier in figure 3, on average companies have more employees than government agencies, although proportional growths are similar for both types of organisation.

The proportion of temporary and fixed-term employments has increased in general in Sweden during the last few years (von Otter 2003a). It has been estimated that many of the permanent jobs lost during the economic crisis of the early and mid 1990s have been replaced by more insecure forms of employment such as those mentioned above, especially for young people. It is clear, however, that there are differences between sectors and types of jobs. The IT industry in general, and especially specialised interactive media producing companies, have often been believed to have a high proportion of employees with different kinds of insecure or short-term employment. Our results from the 2001 survey presented another picture. The average company had less than six per cent fixed-term employees and hired consultants were more or less nonexistent (Sandberg and Augustsson 2002). The results regarding employees of organisations in general that have in-house interactive media production are similar: the average percentage of fixed-term employees is 2.4 and the average number of consultants one. This means that on average consultants make up nine per cent of the workforce focussed on interactive media production. If purchase is included, the average percentage of consultants drops to six. The distribution of both fixed-term employees and consultants within organisations is uneven though. 92 per cent of organisations have no fixed-term employees and 81 per cent no consultants.

Insecure forms of employment have increased, but it does not seem to have happened in interactive media related work, neither in specialised firms nor in-house operations. Important to note is that both specialised firms and organisations in general refer to established organisations that *de facto* have employees. In neither case are organisations without employees[38]. Thereby, some of the actors that handle the flexibility and overcome the friction of the market, such as freelancers, 'pocket-firms', etc., are excluded. Firms without employees, usually meaning one or a couple of working owners, made up more than one fifth of all specialised interactive media companies. In other words, insecure jobs exist within interactive media, but they are handled through the market rather than employment contracts.

[38] Companies without employees were included in the IM-2001 survey, but left out in the analyses. In the IMSO-2002 survey, they are of course excluded since the lower limit for organisations is set at 200 employees.

Workers and Working Tasks

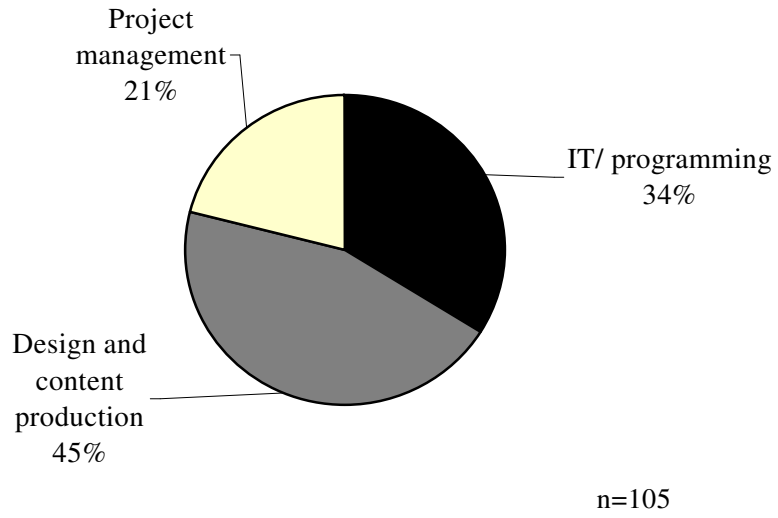
Employees working with interactive media have so far in the report been treated as a fairly homogenous group, apart from distinctions made between production, maintenance and purchase and then only at the organisational level. Both production and maintenance, and to some extent also purchasing, involve different working tasks that are sometimes handled by different employees, especially when interactive media operations are larger in size within organisations (i.e. there is a division of labour within organisations).

In our previous studies we have classified interactive media workers according to three main functions, activities or working tasks: IT and programming, design and content production, and project management. The first group refers to employees that handle the technical aspects of interactive media. These are closest to 'traditional' IT and computer consulting. The second group design the graphic interface of solutions and handle the layout and copy of the actual content. They are closer to journalists and advertising and information workers. The third group are in charge of the overall planning, supervision and implementation of the solution (usually based on the criteria given by top management). Employees from all three groups can be involved in both production and maintenance, as well as purchasing. Employees handling IT and programming, for instance, can work both with the actual production of solutions and be involved in technical maintenance, just as content developers can design the layout and text of new solutions and handle updates. For a more detailed account of working tasks at the individual level, see Sandberg et al (forthcoming).

Our results show that 34 per cent of interactive media workers within organisations in general mainly handle IT and programming, 45 per cent mainly handle design and content and 20 per cent mainly function as project managers (see figure 24). The reason to say 'mainly' working with certain tasks is that employees quite often are involved in more than one task. The horizontal division of labour is not absolute, especially not when the number of employees is low. The separation might in these cases be almost impossible, or useless, to make (Darin 2003). Organisations that only purchase and use interactive media might of course have employees responsible for technical maintenance and content maintenance and updates, but the distinction between the working tasks described above is less useful here - it has to be made according to other criteria.

On average, companies have a higher proportion of workers focusing on IT and programming (38 per cent), and fewer working with content and design (38 per cent) than government agencies (30 and 53 per cent, respectively). Further, organisations that handle all of their production in-house have a higher proportion of workers focusing on design (56 per cent) than those who subcontract parts of production (41 per cent). The latter is somewhat surprising given that one of the main reasons for organisations to subcontract part of their production was to gain technical competence.

Figure 24. Distribution of in-house interactive media employees on specific working tasks within average organisations.



Source: Augustsson & Sandberg (2004)

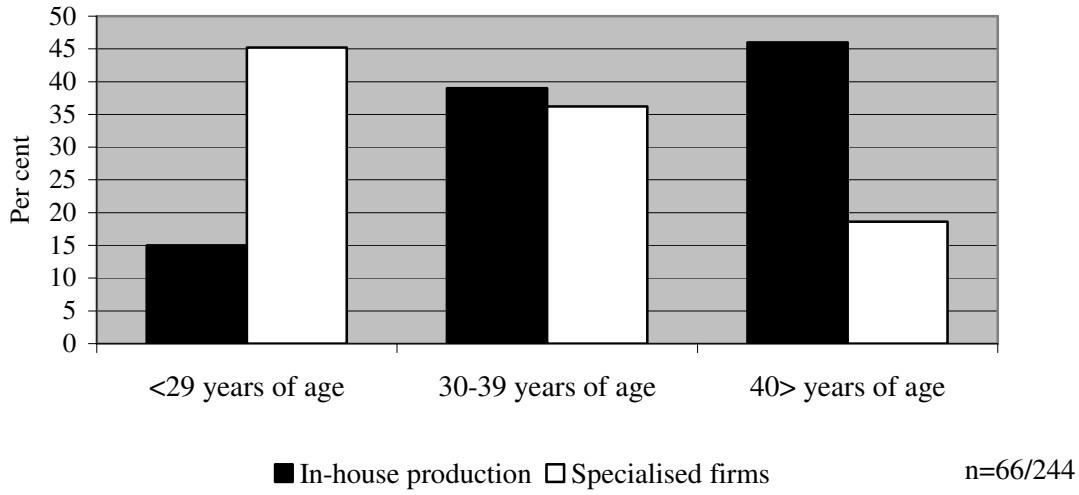
The average distribution of employees between tasks in in-house production differs from specialised interactive media producing companies, where a larger proportion handles IT and programming (41 per cent) and fewer deal with design and content production (36 per cent). The differences may reflect that employees within organisations that handle their own interactive media operations internally spend a higher proportion of time up-dating and maintaining the content of their interactive media solutions, rather than producing new solutions although there is of course programming involved in the former tasks as well. The differences are expected given that actual development of interactive media solutions is not the primary task of organisations in general. They simply need and/or want interactive media solutions and have decided to produce them themselves.

A Job for All Ages?

Sweden, like most industrialised countries, is characterised by an aging workforce, despite decreases in the average actual age of retirement among the population. An obvious reason is the average increase in years spent in schooling, creating a prolonged period of youth (Arnell Gustafsson 2003). There is also a social age segregation of the labour market, with workers in some sectors having a higher average middle age than other sectors. Some types of jobs, for instance within the fast-food industry and call centres, are typically occupied by younger workers (although there are of course older workers there as well). Other jobs have an older workforce due to, among other things, higher demands for formal education and experience, or problems attracting younger employees.

The interactive media production sector is characterised by a very low average age of workers. Our IM-2001 study showed that 45 per cent of employees were under 29 years of age and 36 per cent were between 30 and 39 years of age according to management. This deviates considerably from working life in general where average ages are considerably higher. Figures for workers with similar working tasks within organisations that handle their own interactive media production in-house are not at all as extreme. 15 per cent were below 29 years of age, 39 per cent between 30 and 39, and 27 per cent between 40 and 49 (see figure 25). These figures are closer to the labour market in general. By making an estimate based on the percentage of employees within each age group, we found that the average age of in-house employees producing interactive media was 40[39]. This differs significantly from specialised interactive media firms where the average age was estimated to be 33 years.

Figure 25. Comparison of age distribution of employees focusing on interactive media production within specialised firms and in-house within organisations in general.



Source: Augustsson & Sandberg (2004)

There are some possible hypotheses for this discrepancy in average ages of workers between specialised interactive media firms and in-house production. It is reasonable to assume that some workers that handle interactive media production within organisations in general had already worked in other related areas, like IT support or information, and received further competence development to broaden or alter their working tasks to include interactive media production as well. If this is the case (which we know it is in at least some organisations), then it is probable that the age difference existed before workers started producing interactive media. Or, put differently, when

[39] To make an estimate of the populations distribution, it is necessary to limit categories. The limits were set at 18 and 65 years of age. The placement of both the upper and lower limit can be questioned (Most people still study at the age of 18 (Arnell Gustafsson 2003), and the actual average age of retirement is lower than 65 (Marklund 2000). Still, the same limit was used for both compared groups of employees, so the relative difference in age is correct.

interactive media production became more widely spread in Sweden around the mid and late 1990s, the employees available performed it, and they differed in age depending on the organisation of production.

Another reason behind the differences might be life situation and values regarding work and private life. Work in certain parts of the interactive media and IT industry has been characterised as borderless (Allvin et al. 1998) with long and irregular working days and a lack of separation between work and leisure time. That kind of work situation is more manageable for young people without children and the family responsibilities that comes with them. Working hours can be long for interactive media employees within organisations in general as well, no doubt. But they are more regular than in the interactive media and IT industry. Furthermore, the interactive media producing industry is far more dynamic than working life in general, meaning that the probability of job loss is higher. Thus, it might also be a selection effect, i.e. that older workers choose to work under more regular and safer circumstances.

It is not just a matter of selection on the part of older in-house interactive media workers, but also for younger workers with competence within interactive media. They had opportunity to become employed within established organisations (due to the shortage of skilled IT workers), but to a larger extent chose work within younger specialised interactive media firms. Their choice to do so is probably a combination of values on the one hand: it is cooler to work for specialised firms and the possibilities to work with challenging projects seems higher (Himanen et al. 2001); and estimated higher future salary levels, on the other.

To this should be added the culture of youth that seems to characterise the interactive media industry. It might be that older applicants are discriminated against, their competencies not appreciated, their ability to learn new ones mistrusted, that they are seen as not able to interpret and adapt to the 'cultural codes' of interactive media or simply not fit in at a hip interactive media firm (Eckerstein et al. 2002). Thus, there might also be a negative selection effect.

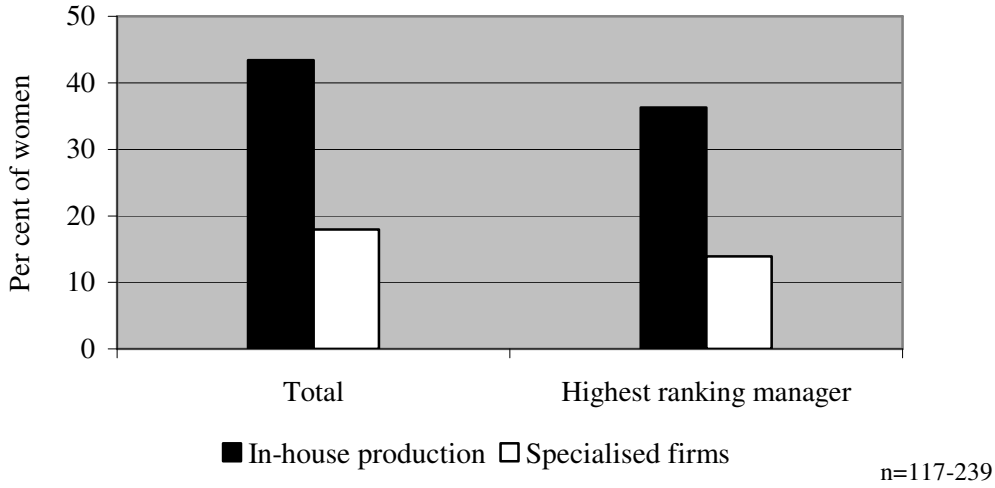
A Gendered Labour?

The question mark in the title of this section is more or less unnecessary: the labour market is not only segregated by age, but also by gender (and ethnicity, class, etc.). This concerns both the horizontal and vertical division of labour. Women and men work in the same sectors in differing capacities and within the same sector fewer women than men generally have managerial jobs (see e.g. SOU 1998; Hultin 2003). Interactive media is no exception to this. Still, it is of interest to know if gender differences are based on the actual practice, i.e. interactive media production, or on the organisational setting in which it is produced; within specialised firms or in-house within firms and government agencies. The causes of gender differences depend on the basis of segregation. Probable causes differ if one gender (in technology related areas usually women) is less represented within a practice regardless of the organisational setting, than if gender distribution differs due to organisational setting.

Women are a minority in all functions within the specialised interactive media firms and make up 18 per cent of all employees working with these functions, and only 14 per cent of companies have a woman as the highest manager. The situation differs within organisations in general. Here, the average percentage of women is 43. The person with the ultimate responsibility for interactive media production within organisations in general is a woman in 39 per cent of cases (figure 26).

Thus, there is nothing atypical about women working with the actual practice of interactive media production. Given that specialised interactive media firms and in-house production is equal in size, women make up roughly one third of all workers and a quarter of highest-ranking managers. This still means that women are under represented, but not to the extent usually depicted in discussions of interactive media. The fact that men seem to dominate to such a large extent is because they occupy to a larger extent the more visible – and prestigious – positions: those in specialised interactive media firms. This does not, of course, mean that issues of gender are not an important issue within interactive media production, either in specialised interactive media firms or in-house production.

Figure 26. Comparison of average percentage of female interactive media employees and highest-ranking manager between organisations in general and specialised firms.



Source: Augustsson & Sandberg (2004)

We believe that the gender differences between specialised interactive media production firms and organisations in general with in-house interactive media operations may be due to similar causes as age differences. That is, there might be more women producing interactive media within organisations in general because they have received competence development and job enlargement or alteration. When an established organisation decides that it is going to start producing interactive media in-house, it might be harder for managers to bypass competent women employees interested in being engaged, than for specialised interactive media firms to turn down

women because they lack sufficient formal education or experience (although women might still be overlooked in organisations that start with in-house production).

It might also be that women prefer (or rather are forced to) find employment with more regular working hours because they usually have the major responsibility for the family household. In other words, the pressures to perform unpaid domestic labour limit their possibilities for paid labour (SOU 1998). Thus, some women are interested in working with interactive media, but feel that specialised firms are not an option because they demand physical and mental engagement that cannot be combined with women's forced family responsibilities. It is also possible of course, that to a larger extent than men, women view interactive media production as a job rather than a vocation and hence are unwilling to make the kinds of commitments specialised firms appear to demand.

Negative selection effects, that specialised interactive media production firms employ women to a lesser extent than organisations in general, is also a probable reason. This might be due to conscious discrimination, unconscious exclusion or negative effects of the role of informal networks for recruitment. Studies have shown that informal networks are an important source of recruitment within the interactive media industry, just like many other labour markets. Informal networks tend to be homosocial; the members of the network share similarities in terms of education, ethnicity, gender, class and education that exclude those perceived as different (Darin 2003). Because women (as well as immigrants) are excluded from these networks, their possibilities of getting a job are lower than for male workers (Granovetter 1974). They become invisible, which could explain why male managers claim that there are no qualified women to hire even though new women graduate from interactive media related educations every year.

Still, one should not deny the fact that there are fewer women who apply for IT and interactive media related educations every year, which simply means that there are fewer women who hold relevant formal degrees. At the same time, formal education is not ranked by managers as an important source of interactive media competence, which should mean that the lower proportion of women than men attending technical educations is not the sole (nor perhaps even a major) reason why they are a minority within interactive media. It might be that formal education has a threshold effect: managers claim that it does not matter, but in reality they largely tend to choose between workers with the education in question (see below and Augustsson and Sandberg 2002; 2004; Darin 2003).

Then why is it that specialised firms regard women's 'informal' experience as being less than that of men and choose to hire the latter? One reason might be the importance and impact of networks and social relations in hiring. If men and women do not meet during schooling, the chances men are aware of the existence of competent women are reduced. Further, people tend to have less trust in the informal competence, as well as formal credentials, of those perceived as different from themselves, in the interactive media sector meaning women and immigrants.

11. Competence and Competence Development

Competence levels and competence development is especially crucial in areas where there are rapid changes in job and skill demands. Competence development, whatever form it takes, is necessary for workers in order to keep up with changes. Higher levels of education usually involve and demand the competence of knowing how to learn. An often-used expression among engineering students at KTH (The Royal Institute of Technology) is that 'an engineer is someone who is not really good at anything, but give him/her a week and he can learn how to do anything'. Interactive media production is one such area due to the constant technical developments taking place and the new skill demands this creates. Employees therefore need both generalist and specialist skills in order to handle and keep the job they currently have, as well as be employable for other ones. It is important to separate the discourse of competence development from the actual demands in the work situation; the talk of the centrality of knowledge and the demands for competence development has most likely increased by far more than its actual importance for workers. But it seems clear that interactive media workers cannot rely solely on their formal education or prior experience for long, they need competence development to keep up with demands and thereby remain employable (Augustsson and Sandberg 2004). Furthermore, those that previously worked within the interactive media sector, but lost their jobs (often through layoffs or shutdowns) have had a hard time of getting back in again.

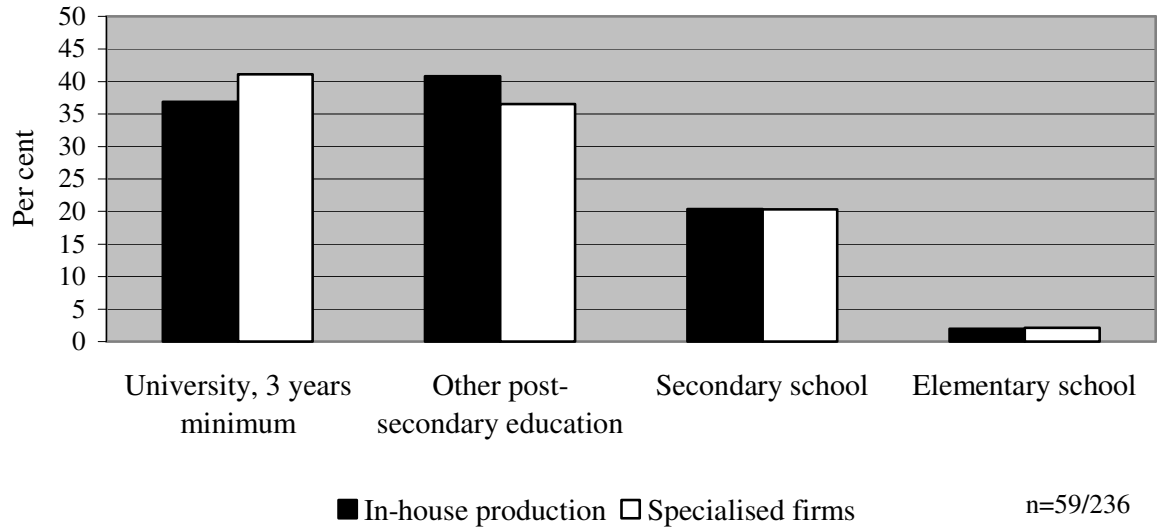
Levels of Formal Education

Levels of formal education are generally high among employees focusing on the production, maintenance and purchasing of interactive media. Within average organisations, 37 per cent of employees have at least three years of university and 40 per cent some other form of post-secondary school education (see figure 27). In this respect, there is no difference between companies and government agencies.

The levels of formal education do not deviate much from employees within specialised interactive media producing companies, where 41 per cent had three years or more at university and 37 per cent some other form of post-secondary school education according to managers' estimates. This is a little surprising given the differences in age distribution between the two groups of employees and the known curve-linear correlation between age and levels of formal education[40]. Still, the length of formal education says nothing about its content. Following earlier discussions about in-house workers job-enlargement, it is probable that many have an education that does not focus on interactive media or is even related to IT.

[40] Average levels of formal education in age groups generally increase with one year every year from the age of six to seven until around 18, where the proportion of the population that attend university decide the slope of the curve. After 30 years of age, the slope flattens out as increases in average levels of education are very small. Thus, people in older age groups tend to have longer educations than younger ones. But there is also a negative cohort-effect of age, which means that people born earlier attended school in a historical period when the mandatory and average years of schooling were fewer.

Figure 27. Managers' estimate of the highest level of formal education among employees focusing on interactive media. Figures for in-house production and specialised firms.

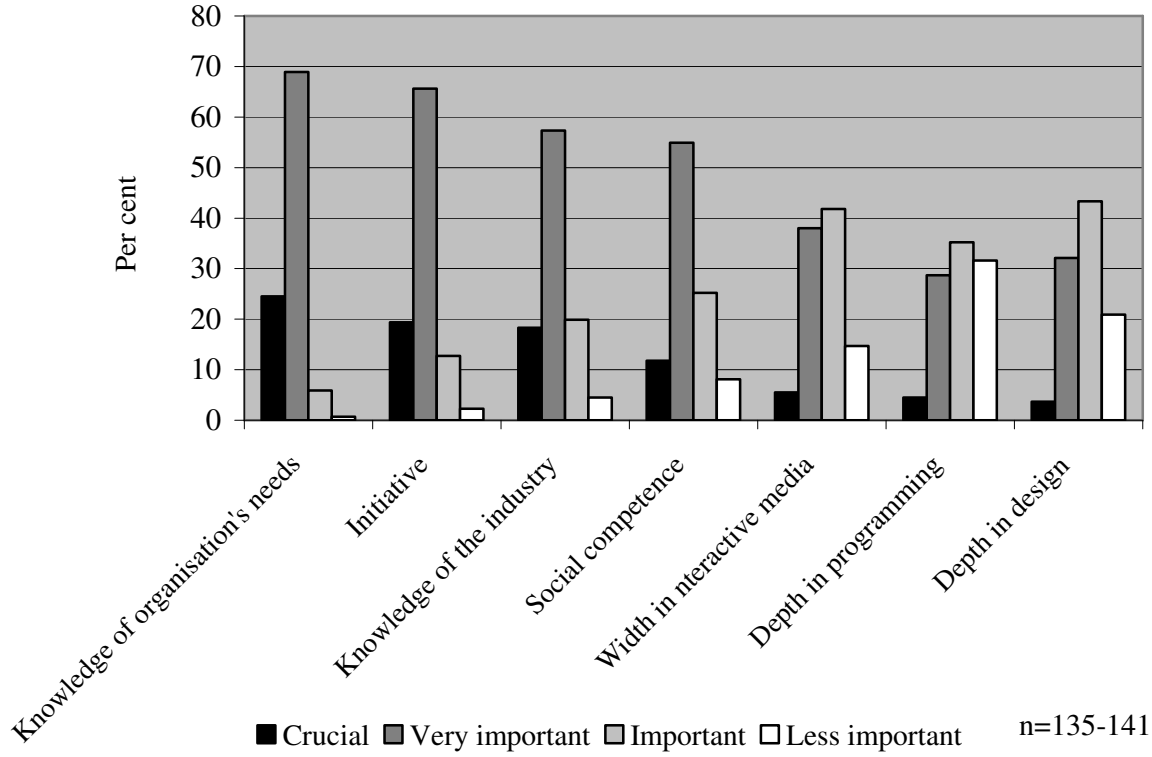


Source: Augustsson & Sandberg (2004)

Important Competencies

Interactive media work is generally regarded as complex labour that requires a high level of competence among employees. It is thereby part of the knowledge work considered to be an important characteristic of the future labour market and working life (Blackler 1995; Burton-Jones 1999). Although general levels of competence are high, not all of them are of equal importance and nor do they increase the employability of workers to the same extent. According to management, the most important types of competencies for employees focusing on interactive media are knowledge of the needs of the organisation and the business it is in, and the ability to use initiative. Of least importance is an in depth knowledge of IT, programming, design and content production (see figure 28). The importance given to knowledge of the own organisation and the business it is in is not surprising, since this was one of the important factors for organisations' choice to handle part of their interactive media operations internally as previously described. Because organisations feel that this knowledge is of importance, they prefer to hand over interactive media production to their existing employees, or hire new ones that are socialised into the organisation. Interesting to note here is that there is no correlation between the extent of organisations internal interactive media operations and the evaluation of the importance of different competencies. It would be reasonable to assume that organisations that handle all of their own interactive media production internally would put more emphasis on in depth knowledge within the technical and design aspects of interactive media, while others saw this as less important since they outsource parts of interactive media production from others. But this is not the case.

Figure 28. Managers' views on the importance of different competencies for employees focusing on interactive media.



Source: Augustsson & Sandberg (2004)

According to managers in the IM-2001 study, the most important competencies for employees within specialised firms are in-depth knowledge within the own area of expertise, social skills and to some extent initiative. Although the question was identically formulated in the two surveys, the categories differed somewhat due to differences in the organisational settings between specialised firms and in-house production. Knowledge of the own organisation and area of business were not included in the IM-2001 survey. There was, however, a category measuring the importance of generalist knowledge of interactive media that corresponds to specialist firms' own area of business, but not the one of their customers.

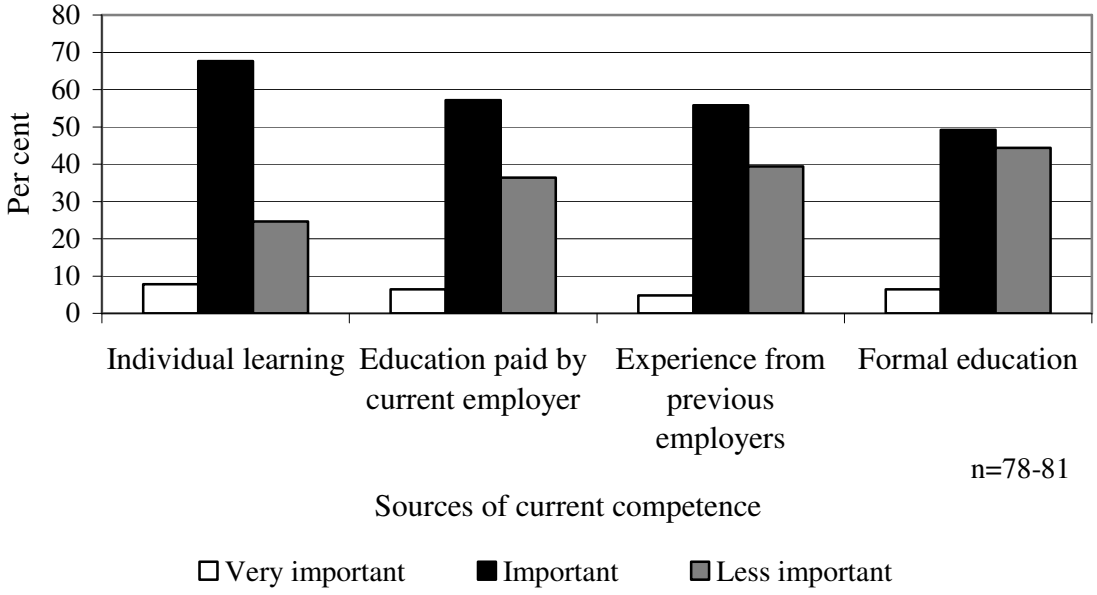
Interesting to note is that several of the competencies viewed as important for both in-house workers and employees in specialised firms are not the type that can be easily acquired through formal education. Rather, it is a combination of socialisation, experience and social skills. Workers employability is thus not simply a matter of having the right combination of technical skills, but also learning how to act and behave in the right way. This could perhaps explain the low importance given to formal education as a source of current competencies (see below).

Sources of Current Competencies

The notion that working life is becoming more dynamic and fluid, and thereby demanding that both organisations and employees become more flexible and able to change has lead to an increased awareness of the importance of both workers' and organisations' knowledge capital. This, in turn, means that greater focus is put on competence development and knowledge building. It is generally agreed that the need for competence development does not end when individuals leave school; there is a quest for life-long learning (cf. Lundgren 1999). During the last few decades, attention has been rained on the individual and collective learning processes that take place through work, at the expense of attention paid to formal education. In reality, both formal education and working life experience are of course important. They are complementary, rather than exclusive components of life-long learning. Here, we have measured both sources of competence.

When management was asked about the relative importance of different sources for the current competencies of employees focusing on interactive media, results show that the most important sources are learning in the present job and education paid by the current employer. Experiences from other employers and formal education are seen as less important (figure 29). Differences in estimates of the importance of different sources are however rather small, especially compared to specialist interactive media producing companies. In the IM-2001 study, formal education ranked much lower. In both cases, experience, especially from the current employer, ranks higher.

Figure 29. Managers' views on the relative importance of different sources for interactive media employees' current competencies.



Source: Augustsson & Sandberg (2004)

We believe that there are three explanations why formal education is not seen as more important compared to working life related sources of competence development for interactive media workers. First, interactive media related educations are of recent date and a majority of employees have not attended them simply because they did not exist when they received their formal education. There is usually a time lag between the point in time when a practice, like interactive media production, starts and formal educations are developed. This means that workers in the early stages of a practice will not have attended specialised educations. In Sweden, the paradoxical situation is that many students will graduate from education focussed on interactive media at a time when the interactive media sector, and the IT sector in general, experiences a downturn (Augustsson and Sandberg 2004). This has caused massive falls in the number of applicants to IT related educations (Augustsson and Sandberg 2003a). In a few years time, it is predicted that this will (again) create a shortage of skilled IT workers when companies start hiring again and older employees retire.

Second, higher formal education gives general competencies such as theoretical skills, more developed abstract thinking, knowledge of how to find information and learn, ability to take initiative and structure ones own work, problem solving skills and experience in how to collaborate with others in order to get things done. The attitudes and behaviours managers are looking for, which they view as personal and social skills, coupled with the results of working life experience might in fact partially be the results of formal education. Formal schooling does not only, or in some cases even mainly, generate technical skills. It is also a process of socialisation that creates a shared habitus among the members (Bourdieu 1986; cf. Broady 1991). This further leads to homosocial workplaces through network based processes of normative institutional diffusion (Powell and DiMaggio 1991; Scott 1995; Brinton and Nee 1998). This means that formal education does in fact have a crucial importance, but managers underestimate it because it results in generalist, rather than specialist, skills.

Third, and following the prior argument, formal education has a partially unconscious threshold effect as a significant source of competence for employees. This becomes apparent when considering that a large proportion of employees involved in interactive media production in fact have a high level of formal education. Even though formal education is said to have limited importance, everyone has it. Formal education is a prerequisite to be eligible for employment, but above this threshold, other factors seem to be of higher importance. This argument resembles findings from gender and ethnic studies: gender and ethnicity is supposed not to matter, but still there is a vast majority of Swedish males in interactive media production (cf. Gunnarsson et al. 2003, especially the chapter by Eriksson and Eriksson).

It is generally assumed that the value of formal education decreases over time at the expense of a heightened importance of work-life experience. But there is no correlation between managements' views on the importance of formal education and the proportion of employees in different age groups, or age index. If there is a deflation in the value of formal education over time, it should be of less importance if

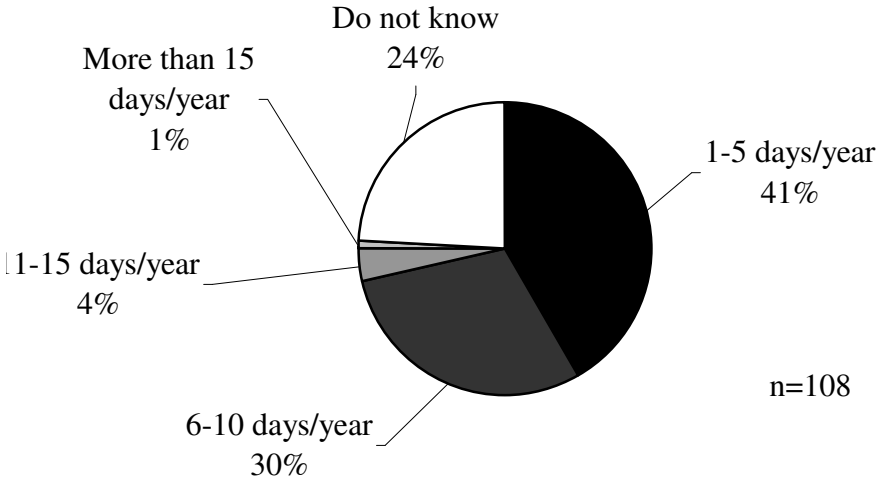
the average age of employees is higher (since this suggests a longer period of time has passed since they went to school). This cannot be found here.

Resources for Competence Development

The IM-2001 study showed that employees were offered extensive resources for competence development in terms of money and/or time, but only a small proportion of them had used these resources maximally during the previous year. One major reason for this was that companies lacked a coherent strategy for securing competence development among their employees. This fact, in combination with an individualisation of responsibility for competence development and a high workload made it hard for employees to use the resources put at their disposal.

Employees producing interactive media solutions within organisations in general are offered a fixed equal amount of competence development every year in five per cent of organisations and employees in another 71 per cent of organisations are given amounts that differ individually. The total proportion of employees that are offered resources for competence development does not differ between in-house production and specialised firms. But it is more common to offer a fixed time of competence development in specialised firms, where 14 per cent of firms do so. The reason it is more common in specialised firms might be that promises of competence development function as a selling point in employment contracts in order to attract workers, especially when there is a labour shortage (Augustsson and Sandberg 2004).

Figure 30. Annual resources for competence development offered to employees producing interactive media within organisations in general.



Source: Augustsson & Sandberg (2004)

41 per cent of the in-house employees that are offered competence development are promised between one and five days of competence development a year and 30 per cent of employees are offered between six and ten days. On a yearly basis, this on average amounts to roughly one hour a week or 2.5 per cent of working time[41]. Four per cent of employees are offered between eleven and 15 days and less than one per cent of employees 15 days (see figure 30)[42]. This means that employees working with in-house interactive media production within an average organisation are offered about 5.6 days for competence development a year, or the equivalent in money.

A first and obvious conclusion is that offers of competence development differ significantly between organisations, although a majority offer less than ten days a year. A second conclusion is that a large proportion of managers, roughly one in four, do not know the amount of competence development their employees are offered. A third conclusion is that general levels of offers of competence development are lower for employees working in-house with interactive media than those in specialised firms. In specialised firms one may be more aware of the need for constant competence development for employability.

A larger proportion of firms than government agencies offer their employees resources for competence development. However, the government agencies that do offer their employees resources for competence development on average offer more days per year than firms. But there is no difference between companies and government agencies regarding the amount of employees that actually use the resources they have been promised.

Actual Levels of Competence Development

The figures above show the amount of time that employees are offered by employers. Even if they are useful to determine the resources available, and to some extent the weight put upon competence development by employers, they are a poor indication of the actual competence development that employees receive. To get a figure of this, it is important to see how many of the employees that actually have the possibility to use the resources offered to them. Our results show that within 25 per cent of organisations, between 80 and 100 percent of employees are able to use the resources fully. Within 26 per cent of firms less than 60 per cent of employees are able to use it fully (figure 31). Based on the figures below, we have calculated the percentage of the resources that employees within an average organisation use[43], which may be easier to comprehend.

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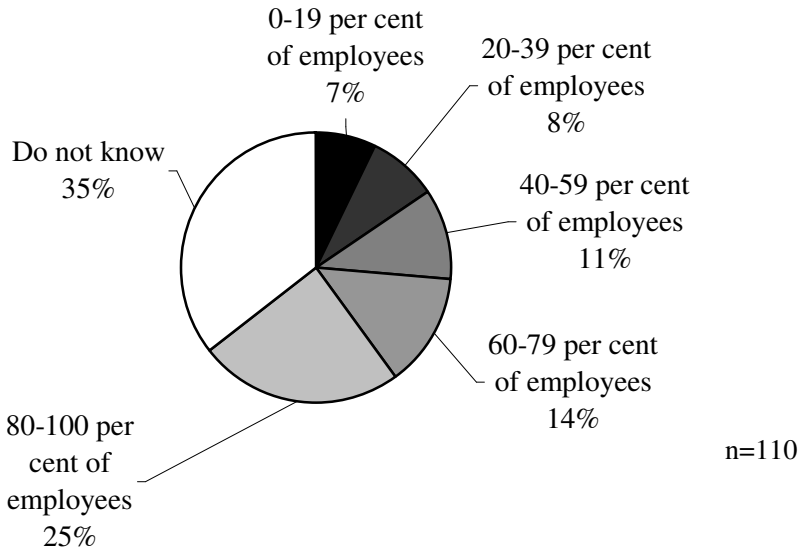
[41] The measure is based on 40 work-hours/week, 45 weeks a year and an average of 5.5 days of competence development offered. The same measurement was used in the IM-2001 study.

[42] If the 'do not know' category is excluded, the proportions alter. Employees in 54 per cent of organisations receive 1-5 days per year, 40 per cent receive 6-10 days, five per cent 11-15 days and 1 per cent more than 15 days per year.

[43] This was done by excluding the 'do not know' category, adjusting the distribution, multiplying the reported proportion of employees within each category with the mid-points of that category (i.e. 90 for the category '80-100 per cent'), summing the values together and dividing by 100 for each

Figure 31. Percentage of organisations where different proportions of interactive media employees use resources for competence development fully.



Source: Augustsson & Sandberg (2004)

The results show that employees working with interactive media operations use 62 per cent of resources available for competence development within average organisations. This can be compared to specialised interactive media producing firms, where the proportion of resources used in average firms is 55 per cent. Thus, organisations in general seem somewhat better at managing the competence development of their employees. One way of looking at this is that organisations save about 40 per cent of their budgeted costs for competence development among these employees (roughly equivalent to a total of 20 working days per organisation). Another way to look at it is that organisations, including their employees, fail to achieve their goals for competence development.

The Limited Knowledge of Levels of Competence Development

As the figures above show, there is a large proportion of organisations where managers do not know the amount of competence development their employees have received in the previous year, in fact higher than within specialised firms. In our previous studies we hypothesised that this lack of knowledge among managers concerning the state of competence development among employees despite the limited size of average firms (which makes day to day communication between managers and virtually all employees possible) was a consequence of the firms' brief history and so-far underdeveloped structures. Here, we find that managers within more established organisations with well-developed (although mot necessarily more efficient) structures are less able to determine the extent of competence development among employees

organisation. The reported value is the mean of organisations, not weighted according to the number of employees per organisation.

working with interactive media related tasks. This indicates that managers' knowledge of the state of competence development among employees is not only a function of how well developed structures for competence development are within organisations.

The same questions regarding offers of competence development and the proportion of employees that actually used the time offered were asked in a survey directed to a representative sample of all Swedish companies with 25 or more employees, conducted by Klas Levinsson during 2003 (Levinsson 2004)[44]. In that study, the respondents were representatives of top management and the answers concerned all employees, i.e. not only interactive media workers. The results, based only on organisations with more than 200 employees, show that employees were generally offered less competence development than interactive media workers in specialised firms (the IM-2001 study), but similar amounts as those in firms that handle their interactive media production in-house (IMSO-2002). This is not surprising, given that 185 of the companies in Levinsson's study belong to the same population as the organisations in this study. Although we have no data, it is likely that in some cases it is actually the same companies that have answered the two surveys.

The proportion of managers in Levinsson's study who do not know the number of employees that have used the time for competence development offered is considerably lower than in both the IM-2001 and IMSO-2002 study. This suggests that the reasons why managers lack information on the state of competence development among employees is not dependent on the organisational setting since both managers in specialised firms and within organisations in general have poor information regarding interactive media workers. There is, however, a difference between employees in general and interactive media workers specifically, as shown by the comparison between the IMSO-2002 study and Levinsson's study of Swedish companies in general. This suggests that there is something about interactive media in particular that makes it hard to estimate levels of uptake of competence development. It might be due to the close relation between 'normal' work and knowledge development in interactive media activities that make it hard to determine when an employee is performing regular working tasks and when they are learning new skills and thereby engaged in competence development (Johansson 2000). As a consequence, traditional methods of measuring levels of competence development are of limited value in relation to IT related activities. Thus, although the organisations included here have a long history and are more likely than newly started interactive media firms to have established routines and structures for measuring competence development, these do not seem to fit the genre of work that interactive media is an emerging example of. Given that competence development, and especially experience gained through work, is seen as important for employees it does seem relevant to develop new methods of measuring the extent of it that employees receive in practice.

[44] Levinsson used the exact same formulation of the questions in his survey as we did in the IM-2001 and IMSO-2002. The answer categories differ for one of the questions, though. Instead of asking the percentage of employees that used the time offered, he used a scale consisting of 'practically everyone', 'three out of four', 'half', 'one out of four', 'less', and 'do not know'.

Why do not Employees Use Offers of Competence Development?

There might be several reasons why resources for competence development are not always used, or used maximally. It might be that employees do not see any need for more competence development, or do not want to learn more. Most actors related to interactive media: unions, workers, and employers, do however claim that constant competence development is a key issue to secure workers' employability (both individually and collectively) and the competitive advantage of firms, and of this industry, in Sweden (Augustsson and Sandberg 2004). From a discursive viewpoint, this could be an example of legitimate statements that are decoupled from the actual situation (Powell and DiMaggio 1991). Who in their right mind can be against competence development when the opposite is presented as ignorance? Given that employees may actually lose their jobs because employers want to adjust the competence mix of companies (see articles about the layoffs in *ComputerSweden*, *IndustryStandard* and *Vision*), competence levels and continuous competence development *is* of importance for employees and firms. Still, if offers of competence development partially function as a way to attract skilled workers, as argued above and elsewhere (Augustsson and Sandberg 2004), employers' willingness to support it in practice rather than merely in words might fall if there is a labour surplus.

Another reason might be that employees or employers believe that there are no suitable or price-worthy courses offered. Results from both this survey and the IM-2001 study reveal that managers view courses offered by private education companies as a minor source of their interactive media employees' current competence levels. The courses are expensive, which would explain why employers are unwilling to pay for them to a larger extent, and why employees are not more eager to attend them. At the same time, there are a number of firms that do offer training courses aimed at employees working with interactive media and a number of people that attend them.

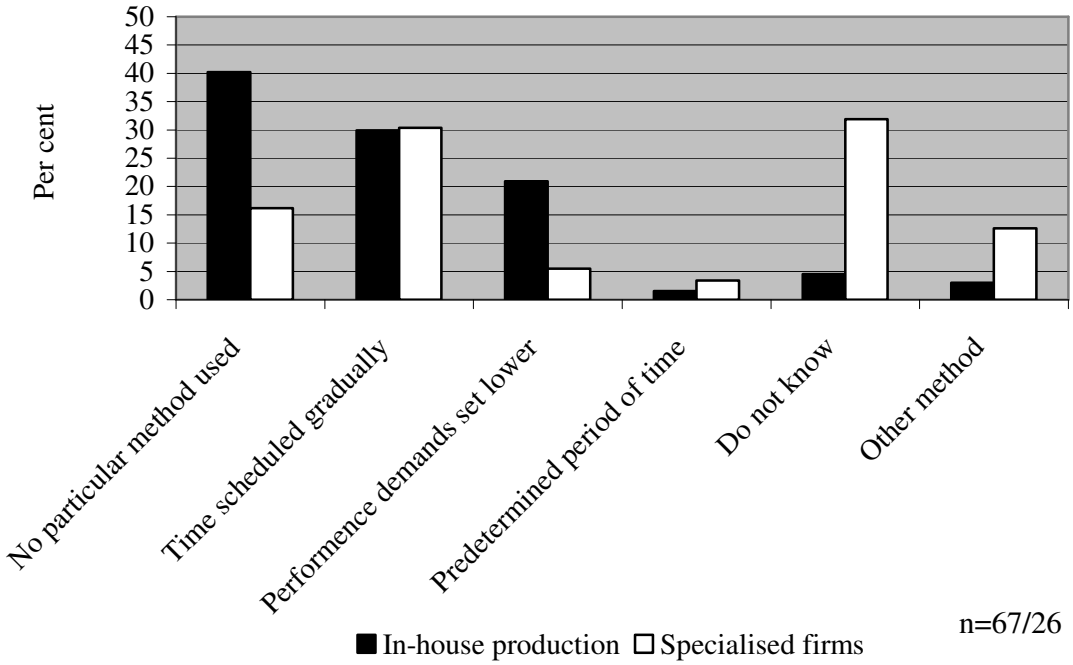
A third reason is that employees feel that they do not have the time for competence development due to excessive workloads. Average numbers of weekly working hours can be seen as one (crude) indicator of workload, especially regarding overtime (here measured as more than 40 hours a week). But analyses show that there is no correlation between average weekly working hours for interactive media workers and the amount of workers that use their resources for competence development fully[45]. This seems to suggest that factors other than lack of time partially account for the fact that resources for competence development are not being used. Lastly, competence development might not take place because there is no effective strategy to ensure that it takes place, which is dealt with next.

[45] The analysis is based on estimated average working time for all employees within organisations, calculated using the categories and figures reported in figure 35). A serious limitation of calculations based on aggregate numbers is that the correlations for specific individuals are not available. It might be that it is the employees with the longest working hours within an organisation that receive the largest proportion of competence development, but it might also be the opposite situation.

Strategies to Secure Competence Development

Our results regarding strategies for competence development show that less than two per cent of organisations in general have set aside special time for competence development (for example a couple of hours every week). 30 per cent take time when it is perceived to be needed, 21 per cent have lowered workloads to secure sufficient time and 40 per cent claim that they do not have any particular strategy within their organisation (see figure 32).

Figure 32. Comparison of strategies to secure competence development for interactive media workers within organisations in general and specialised firms.



Source: Augustsson & Sandberg (2004)

The first result of note is that such a large proportion of organisations lack a strategy to secure competence development for employees working with interactive media. Results from Levinsson's (2004) study of Swedish companies in general show similar results, although questions regarding actual strategies were not included. Despite much talk about the importance of competence development, it is the area where union representatives, for instance, have the least influence and value for employees.

It might be the case that there is no need for an overall organisational strategy for competence development if it is thought that employees actually manage to handle it informally themselves. But there are certain risks with such a (lack of) strategy for employees, since competence development tends to be among the first activities that are cut down when there is a shortage of time and money (Ellström 1996; Metall 2000). Furthermore, the organisation does not get any information on the current competence levels of employees (and the overall knowledge resources of the organisation) and thereby cannot plan for or estimate the future competence

development needed. Having some form of strategy and record of competence development is also crucial for employees themselves and the union, in order to see how much and what kind of competence development different groups and individuals within the organisation receive.

Nearly a third of managers claim that time for competence development is taken when perceived to be needed. Although this seems rational and flexible, it is an uncertain strategy since it easily leads to a situation where long-term needs of competence development are weighed against short term needs in production and are repeatedly put on hold. Employees also become dependent on the judgement of others who decide when there is time for competence development.

Concluding Remarks

The results presented above show that a large proportion of managers do not know how much competence development employees actually received in the previous year, and in cases where they do know it is only in a minority of organisations that employees use competence development maximally. A partial reason for this lack of knowledge is that the amount of competence development for the majority of employees is decided individually and that time is taken when perceived (by managers) to be needed.

This is an uncertain situation from the employees' point of view since they do not know if they are going to receive any competence development at all; they are partially dependent on the judgements of others. This might be especially problematic given that employees focusing on interactive media production are in a minority in all of the organisations portrayed in this report. Their possibilities to protect their resources for competence development against other groups of employees considered to work with more central tasks are limited, especially in times of increased scarcity of resources, they might loose out due to owners' and managers' pressure on the organisation to focus on its core competencies (which mostly probably does not include interactive media production).

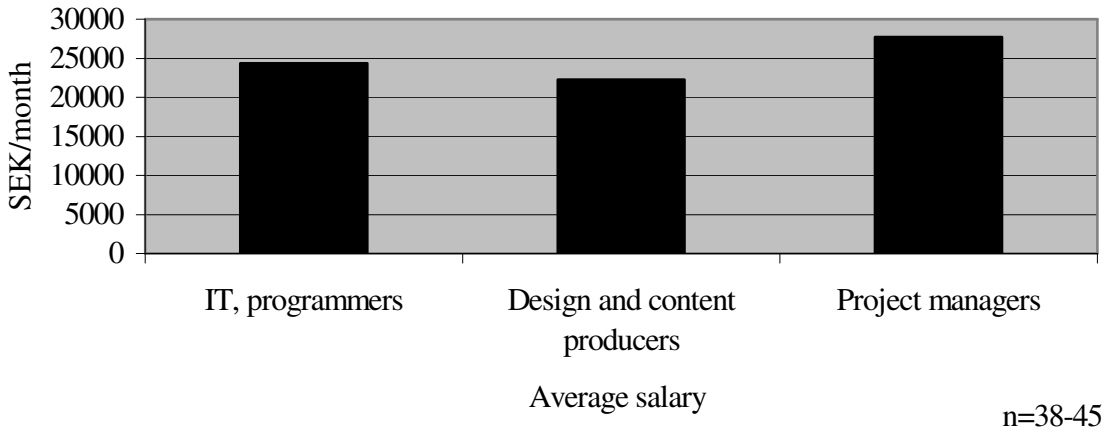
12. Salaries and Reward Systems

Wage levels

One of the areas both companies and employees usually find especially interesting is average salary levels for other employees in similar occupations as themselves. At the same time, this is the area where results seem hardest to obtain, at least through surveys directed to the management of organisations. In this study, as with the IM-2001, this is the question that contains the largest amount of 'do not know' answers and non-replies. As a result, the figures presented below are based only on 38-41 replies (representing the salaries of 54 to 83 employees) and should therefore be treated with caution since they only represent a fraction of the sample and population. The figures have been weighted according to the number of employees within

organisations and thus reflect individual, not organisational averages. The figures show that the average monthly salaries before tax for employees handling IT and programming are 24,300 SEK, for design and content workers 22,400 SEK and for project managers 27,900 SEK (see figure 33)[46].

Figure 33. Average monthly salaries before tax (in SEK) for different groups of Swedish interactive media employees within organisations with in-house production in 2002.



Source: Augustsson & Sandberg (2004)

The salary levels presented above can be compared to those reported for employees in specialised interactive media producing companies in 2001. Average monthly salaries for IT and programmers were 22,200 SEK, for design and content workers 21,600 and for project managers 24,900. With respect to uncertainties involved in these comparisons, it seems that employees working with interactive media production within organisations in general earn more than those within specialised companies. The fact that average salary levels within the interactive media sector are reported to have gone down in the last year due to the dotcom-crisis, makes this more certain.

The difference in wages between in-house employees and those working in specialised interactive media producing firms could be a reflection of an imperfect (labour) market, assuming that both groups of employees are, in fact, performing the same working tasks. Managers in organisations in general performing interactive media in-house probably have less knowledge of 'appropriate' salary levels for different groups of employees than managers in specialised firms since for the former it is a supportive and minor function within the organisation. A second explanation could be that organisations in general have been forced to pay a premium to attract employees since they are perceived as less attractive as employers than the 'hipper' specialised interactive media producing firms. Although there is presently not a shortage of interactive media workers, it is reasonable to assume there is a time-lag effect since existing salary levels are seldom lowered within organisations.

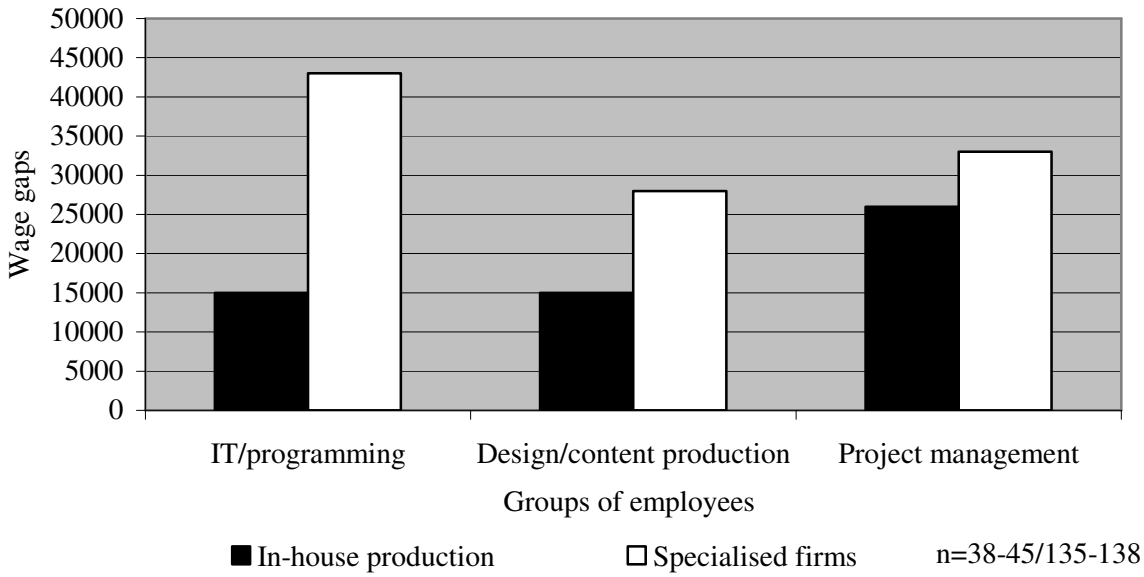
[46] All figures are for monthly salaries before tax in Swedish Kronas (SEK) and rounded off to even hundreds. 1 SEK is approximately 0.11 Euros. Swedish income taxes differ between municipals and income levels, but average is roughly 30 per cent for these salary levels.

A third possible explanation is related to differences in age between the two groups of employees and the earlier discussed hypothesis that in-house employees have previously worked within related areas. It is probable that this is reflected in the average salary levels of in-house employees, since job-enlargement is more commonly associated with salary increases than decreases.

Wage Gaps

Besides average salary levels, it is of interest to compare total wage gaps within the three groups of workers between the two studies. Among specialised interactive media firms, the difference between the highest and lowest average salaries for IT and programmers was 43,000 SEK, for design and content producers 28,000 SEK and for project managers 33,000 SEK. Equivalent measures for interactive media workers in organisations in general are 15,000, 15,000 and 19,000 SEK, respectively (figure 34).

Figure 34. Comparison of maximum wage gaps for interactive media workers between specialised companies and organisations with in-house production



Source: Augustsson & Sandberg (2004)

The number of responses from specialised firms is considerably larger than from firms with in-house production, between 302 and 820, and overall variance tends to increase with sample size (since the chances that atypical, e.g. very high or low values are included increase), which means that they are not completely comparable. However, the coefficients of variance for workers within specialised companies differ between 19.53 and 24.3, and between 17.0 and 20.2 for equivalent employees within organisations in general[47]. For each group of workers, we find that the coefficient of

[47] The coefficient of variance describes the standard deviation as a percentage of the mean value, which is useful when comparing dispersion between different samples (especially when sample sizes or value levels differ considerably).

variance is smaller among in-house employees than for workers in specialised interactive media producing firms. This shows that wage gaps are indeed larger among specialised interactive media producing firms.

13. Work Environment and Agreements

There has been increased public concern regarding the psychosocial work environment in working life in general in the last couple of years. Among the most worrying tendencies are those caused by the increased flexibility and fluidity of working life, coupled with increased work demands and new IT solutions that make it possible to work everywhere and at all times. These changes are thought to create a borderless society where work and the rest of life blend together, often thought to lead to work invading the private life (Allvin et al. 1998). The interactive media industry and the wider IT industry are no exceptions. On the contrary, it is believed to have a high degree of stressful jobs and low barriers between work and private life. In this respect, it is important to separate two different aspects of the IT industry: as *developers* of the solutions that make new forms of work possible, and as *users* of such solutions. The developers of interactive media and IT solutions are often relatively young entrepreneurial firms where employees (as well as owners) work long hours creating new types of services and products, at least in specialised companies. The users of such solutions, on the other hand, have their working situation altered by such solutions, and as previously shown have highly limited possibilities to influence the results. While the former situation is partially a result of a certain period in the establishment of a new organisation and industry, the development process of innovation and the enthusiasm (and pressure) associated with this, the latter is mainly the result of a lack of power and knowledge.

In our studies, we have the possibility to determine the extent to which some of the tendencies towards more stressful and borderless jobs are general trends or sector specific by comparing the same kind of jobs in different organisational settings. This is done by looking at actual working hours, record keeping and systems for overtime compensation for workers that produce interactive media in-house and employees in specialised interactive media companies. Further comparisons are made regarding average levels of sickness absenteeism, and the organisation and extent of health care.

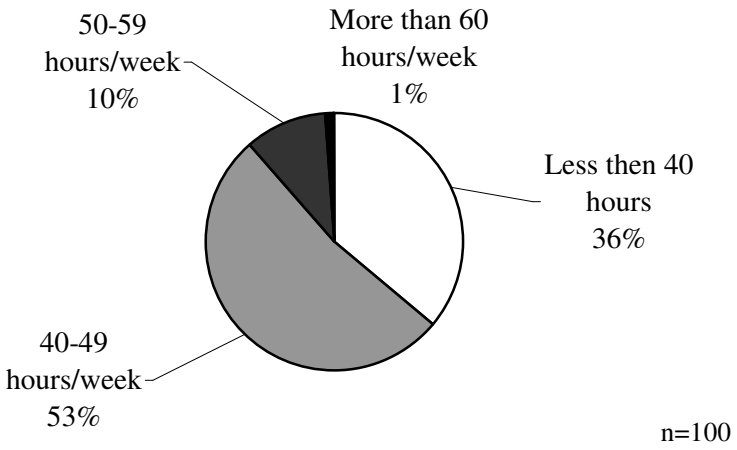
Again, the results are based on the managers' answers and not employees themselves. Individual workers' answers regarding their own situation are in most cases superior to other's estimates of it. This need not always be the case, however. Many organisations, especially larger ones, keep records of absenteeism, paid overtime hours and formal competence development that can be more reliable than the worker's own memory. But when it comes to subjective judgements, there is no alternative to asking people themselves.

Working Hours

Average weekly working hours for in-house interactive media employees are presented in figure 35. These are managers' estimates of the actual working hours of employees, which should be separated from the working hours stated in the employment contract. We see that although a considerable proportion of employees work less than 40 hours a week, the majority work 40 hours or more. A large part of those in the category 40-49 hours a week probably work little or no overtime since scheduled time for full time employees tend to vary between 37.5 and 40 hours a week in Sweden. Still, eleven per cent of employees work as much as 50 hours or more a week, equivalent to ten hours a day or more.

Nevertheless, average working hours for in-house interactive media workers are significantly lower than for employees within specialised interactive media companies where only 21 per cent work less than 40 hours a week, 65 per cent work between 40 and 49 hours and 14 per cent more than 50 hours a week. This can also be seen by calculating the average working time within the two groups of organisations[48].

Figure 35. Average actual weekly working hours for full-time interactive media employees within organisations with in-house production.



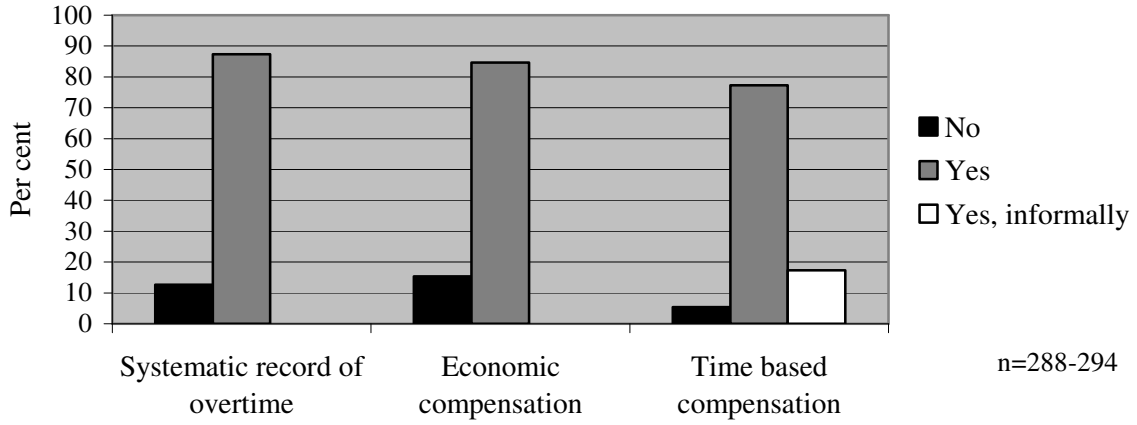
Source: Augustsson & Sandberg (2004)

[48] As one of the categories (more than 60 hours/week) is open-ended and the exact lower border of another (less than 40 hours/week) is not possible to determine, it is not possible to calculate actual average weekly working hours of employees. Treating the distribution as an ordinal scale makes it possible to create comparable values for the two groups of organisations. The value for specialised interactive media production firms is then 49.17, which statistically differs significantly from 44.08, the value reported for organisations with in-house interactive media production. The calculated values are NOT equivalent to average weekly working hours (or anything else). They are simply mathematical values that describe the relation between the groups.

Overtime and Compensation

84 per cent of the organisations in our survey keep systematic records of their employees' overtime. 81 per cent compensate overtime in money and 93 per cent in time. Of the latter, 17 per cent leave it up to employees to handle their compensations informally (see figure 36).

Figure 36. Records of overtime and different forms of compensation.



Source: Augustsson & Sandberg (2004)

Here, we see a considerable difference from specialised interactive media companies where in total about 50 per cent of firms keep systematic records of overtime, 30 per cent offer economic compensation and 80 per cent time-based compensation. Further, the proportion of organisations in general with in-house production that uses formal systems is dramatically higher than for specialised firms. The most probable explanation for these differences is that organisations with in-house production are, on average, both larger and older. Hence, they are more likely to have developed more formalised systems for overtime registration and compensation (Stinchcombe 1965; Mintzberg 1983; Perrow 1986). Furthermore, a considerable proportion of specialist firms have consciously used stock options and other result-based programmes to secure the maximum devotion of workers without increasing costs for overtime and thereby endanger the cash flow of the firms.

Absenteeism

Levels of sickness absenteeism and costs for this to employers and tax payers have increased enormously the last few years and reached levels not previously experienced. There are a number of hypothesis regarding the reasons for this that we do not have the possibility to either strengthen or falsify here (see von Otter 2003a; 2003b). What we do have are managers' estimates of the average number of absent days per year caused by sickness among interactive media workers during the last year, which is 3.6. Equivalent numbers for employees working in specialised interactive media companies during the same period was 2.1. This seems to indicate

that in-house interactive media employees have worse health conditions than those working in specialised firms. Both figures are, however, extremely low in comparison with working life in general. Given the known correlation between age and health (Marklund 2000), differences may partially be explained due to age differences between the two groups of workers. What we lack is information about the actual number of days employees were sick (as we have in the case of actual working days). It might be that the two groups are sick just as often, but that in-house employees choose to report sickness more often than workers within specialised interactive media companies that are often small start-ups with the owner present in production. Employees within the latter companies might be sick without reporting it, either claiming to work from home or compensating for it by working overtime, or they may come to work while sick (be 'sick present').

An additional explanation is differences in managers' knowledge about the health status of their employees. In our study to specialised interactive media companies, 24 per cent of managers did not know how often their employees were sick, compared to twelve per cent in this study. Just as for records of overtime, it is likely that organisations in general have more formalised systems for handling absenteeism and the likelihood that employees report in sick are higher than in specialised firms. Thus, differences in the average number of days employees are sick most likely do not reflect only actual differences in health, but are due in part to differences in the likelihood of reporting in sick and managers' knowledge about the health status of their employees.

Company Health Services

Practically all organisations in this study, 94 per cent, are affiliated to the company medical service system. In 73 per cent of affiliated organisations, this includes health care and treatment and in 69 per cent also counselling on work environment and working conditions. Given that health care and treatment is the basic service provided by company health care, one would expect that 100 per cent of affiliated firms would report this as included. We do not know why a lower figure has been reported here. Among specialised interactive media companies, only 26 per cent are affiliated to company health care service. Among those that are, the proportion that have health care and treatment is higher, 95 per cent, but counselling lower, 61 per cent[49].

The differences in affiliation are hardly surprising given that the organisations in general are on average both much older and larger than specialised interactive media producers. Further, a large proportion of the larger Swedish organisations consist of government agencies, which are under great pressure to serve as good examples as employers for legitimate and political reasons, and being affiliated with the company medical health service system is one way to achieve this.

[49] None of the surveys included questions about alternative forms of health services offered by employers. Although some companies provide this as attempts both to prevent and cure problems (gym cards, massage, health inspections at private doctors outside company health service, etc.).

Collective Agreements

66 per cent of organisations in general with in-house production have collective agreements with one or more unions that cover employees working with interactive media production. 77 per cent of organisations have employees working with interactive media that are union members. It is likely that the actual figures in both cases are higher than this, given that 24 per cent do not know whether collective agreements exist and 17 per cent do not know whether any interactive media employees are union members. If the 'do not know' category is excluded, proportions raise to 89 and 93 per cent respectively. Either way, figures are much higher than for specialised interactive media companies where roughly one in five companies have collective agreements (do not know excluded).

Employees in specialised interactive media producing firms have been presented as uninterested in the union based on the argument that it is a collective solution from the old economy and industrial era that cannot function as a representative of IT workers in the new economy where forms of employment, working tasks, organisation and working hours are different and more flexible. The sector lacks a tradition of unionisation and employees are thought to have instrumentalist reasons to join the union (Sverke 1995), which finds some support in interviews (Bergström and Karén 2002). Levels of unionisation have been lower within the IT sector as compared to working life in general or similar groups of workers (Kjellberg 2001). But they are reported to have increased rapidly after the 'dotcom crash'.

Concluding Remarks

In conclusion, in comparison with specialised interactive media companies, it appears that interactive media operations that are handled in-house in other organisations show working conditions that are more similar to working life in general, at least compared to similar groups of employees. They have developed more systematic routines regarding working hours, overtime and compensation, health care and union agreements than have specialised interactive media companies.

14. Concluding Discussion: Similar Jobs in Different Settings?

The findings in this report seem to support the common notion that specialised interactive media producing firms have been characterised by laissez faire industrial relations, working conditions etc. and by ad hoc management and organisation of administration compared to organisations with in-house production. We believe, however, that it is important to put this situation in perspective. Although larger Swedish firms and government agencies started their in-house interactive media operations at roughly the same time as specialised interactive media companies, there is a considerable difference in the average age and size of organisations within the two populations, as well as their respective sectors. The average specialised interactive media company was not started until late 1992, the median as late as 1996, and younger firms typically tend to be run more informally and have less developed structures and routines (Aldrich and Auster 1986).

The industry, or social field, for specialised interactive media production firms is also new, it evolved rather recently in a process of dialectical construction related to the framing of the practice and the understanding of the central artefact (Augustsson 2002a; 2004). Therefore, there have been few well-developed norms and institutions that govern the actions of firms and the overall situation in the interactive media producing sector. The specialised firms could of course have followed, and to some extent were forced to follow the institutions in place that govern other parts of working life. After all, they are Swedish firms and have to obey the same rules and regulations as all other law-abiding persons and employers. But to differing degrees the specialised interactive media producing firms chose to distance themselves from these by identifying themselves as different: They were part of the 'new economy' and the rules of the established firms and other organisations in the 'old economy' did not, and could not, apply to them, according to the popular discourse of the dot.com boom. This was probably not only a conscious strategy, but also the result of a lack of knowledge of and interest in work life related regulations. The uncertainty and instability, but also freedom and creativity this created was further fuelled by the dynamics of industrial growth that would later dampen the euphoria and hype and lead to a shakeout with accompanying job losses.

With regard to size, the average specialised interactive media firm has 16 employees and the median is only five. Almost a quarter of these firms have no employees at all and consist of just one working owner. For obvious reasons, many of them lack the personnel and HRM departments, layers of middle management and local union clubs that larger organisations have.

Although we have only limited information on the mean and median starting year for organisations that handle their own interactive media operations internally, we are certain that the majority of them were started well before 1992. Several of them also have a background as part of an earlier organisation. In terms of size, all of the organisations have *at least* 200 employees since this was the minimum size limit of the

sample. Many of them are considerably larger and in some cases also part of larger organisations such as groups of companies and the state (Ahrne 1998).

The industries and branches of trade that these organisations are part of are often older than the interactive media industry, in some cases stretching back to the beginning of the industrial revolution, or even longer. Further, a large proportion of the organisations studied here are part of the state and although every single one of these organisations need not be old, they belong to an organisation with several hundred years of history that has given birth to, reconstructed and shaped administrative routines, structures and institutions for all parts of society.

These factors, the age of organisations and industry, as well as size, are seen within organisational studies as crucial for the development of structures, administrative routines, collective agreements, etc (Selznick 1957; Stinchcombe 1956; Mintzberg 1983). It is therefore little surprise that the situation for employees in organisations with in-house production differs from the situation for workers in specialised interactive media producing firms (Augustsson and Sandberg 2003b).

This seems to suggest that the organisational and institutional setting is more important than the working tasks in order to determine who will be involved and what their working conditions will be like. Interactive media production no doubt differs from mining, farming and health care. But within the rather loose borders set up by the task, there are possibilities to choose alternative ways of organisation, both within and between firms and government agencies. The choices will result in different outcomes for employees.

Interactive media production is not something that requires a certain type of organisational setting, or a new economy and changed work ethics. Hierarchic and bureaucratic organisations have managed to integrate this practice, as well as most preceding ones. The much talked about flexibility of the interactive media and IT sector is thereby not a prerequisite, but a result of interpretation (Grint and Woolgar 1997), managerial choice and partially flux, developing into norms and institutions through path-dependent processes. Still, it is in many ways an important condition for smaller companies. Yet again, size more than working tasks determines the organisation of production and working conditions for employees.

The question of whether specialised interactive media producing firms will become more similar to organisations with in-house production, e.g. formalise their structures and processes, is in many ways a question of whether the individual firms will endure and grow in size. We believe that some firms will, and some already have. But the majority of specialised firms will probably face the same development as advertising agencies, architect bureaux, consultant agencies, etc. They will remain small and face a high risk of closure in a turbulent environment that largely rests on informal structures and contacts.

Still, it might be that differences will prevail, i.e. that the specialised interactive media firms that do become older and larger in an aging sector will continue to be different from organisations in general and other parts of working life. The different institutions, or perhaps lack of institutions, that characterised the early stages of the

sector and companies may prevail. If this is the case, it might be right to talk about 'a new working life' that differs on essential points from the traditional Swedish model, which in itself is going through changes. The in-house production of interactive media is in many ways more similar to working life in general than the specialised interactive media producing companies. Working life in general is however just a theoretical ideal, an abstraction, and a statistical aggregate. It consists of a vast number of jobs and forms of organisation that have limited similarity, except being defined as work. The idea of 'normal jobs' is becoming increasingly difficult to conceptualise, theoretically justify and empirically find, in a way similar to (and to some extent for the same reasons as) the concepts of industry and class (Augustsson 2001; 2002b). This does not mean that everyone is becoming a symbolic analyst or knowledge worker (Thompson & Warhurst 1998; Ransome 1999; Hansen 2001), but that in working life plurality is becoming the main characteristic of normality (Urry 2003).

Different Workforces

There are differences between the employees themselves working with in-house production and those in specialised interactive media firms. When organisations in general started in-house production and specialised firms started producing interactive media solutions for external customers, their workforces were somewhat different in terms of gender and age composition. The differences were already there when the two forms of production started, although they may have increased, especially since the specialised firms have attracted a certain type of worker (or they attracted themselves by starting companies). A larger proportion of workers that left traditional IT companies and in-house production in organisations in general was probably younger males, for instance.

The differences between the two workforces might become smaller over time as the practice of producing interactive media matures, even if it is not certain. If specialised interactive media production firms, for instance, continue to rely on (homo)social informal networks for recruitment while in-house production employees quite often are 'converted' earlier employees or hired through formal job applications, differences may persist. Inclusion of currently excluded groups is less likely to come in the specialised interactive media firms than within in-house production. Whether this is a problem or not depends partially on one's preferences and ideas on what it is that people should be included in**.** Is it the practice of producing interactive media solutions, or a certain type of firm (Darin 2003)? Most people would probably say both. But strategically, it might be more fruitful to focus on firms and government agencies than specialised firms and hope that this can work as a gateway into specialised firms, if that is what workers aim for.

Firms versus Government Agencies

As far as in-house production of interactive media in larger Swedish organisations goes, there seems to be little difference between firms and government agencies, at least at the organisational level. Although we have pointed at some smaller differences

regarding the reasons behind certain choices in organising interactive media, the relative proportion of firms and government agencies that choose a particular form of organisation, the internal structuring of production, the overall picture is one of similarity. The same mainly holds true for the employees that focus on interactive media production, maintenance and purchase. For these workers, a large organisation is what it is no matter who owns it and what its purpose and main function is.

Again, this supports the argument that it is the size and age of organisations, rather than the type of work or form of ownership that determines the situation for workers, at least at the aggregate level. A study at the individual level would give a more detailed, and perhaps somewhat different picture where it becomes possible to detect differences between employees working with in-house production in firms and government agencies, as well as between in-house producing employees and those working in specialised firms.

A Variety of Involvement

The two alternative ways of organising interactive media production, in-house production and specialised interactive media producing firms (including mixed forms with subcontracting), started at roughly the same time because managers came up with different answers to how the organisation should meet the perceived demand for interactive media solutions. But the supply of interactive media is not only a choice of make or buy. There are different degrees of involvement in terms of producing everything oneself, producing parts and subcontracting the rest, or purchasing everything from external firms. Organisations that do collaborate with other partners also have different levels of contact with them, ranging from formalised frame agreements to almost spot market-like purchases. Both the level of involvement and the form of relation to collaborating partners further changes over time as organisations choose to outsource or in-source more**,** vary the types of different activities inherent in interactive media, and reconsider who they collaborate with and which form this should have.

Our results show that the level of involvement does have an impact on the interactive media production, especially concerning the number of employees and amounts purchased and subcontracted for, but also the working tasks and important competencies for employees. Those organisations that are more deeply involved do not only have more employees focusing on interactive media operations and purchase for higher amounts from other companies, the working tasks for the employees and the skills necessary differ.

A Coming Polarisation and Future Flows

Even though the majority of organisations have not made any changes in the year previous to the date of study and predict that few changes will be made, a considerable proportion of organisations do change their organisation of interactive media operations. But these individual changes even out on the aggregate level and overall changes are low. Based on this, as well as historical developments from other

industries or practices, we do not believe in either a complete specialisation or vertical integration of interactive media production. Both forms will persist as there will always be some firms and government agencies that are not interested in or do not have the capabilities to handle their own interactive media production internally. This is especially likely given that this study is only based on organisations with more than 200 employees. There are much larger numbers of smaller organisations that demand interactive media solutions, but simply cannot manage it internally.

As stated, we do not believe that there will be a movement towards either complete integration or specialisation (see Chandler 1990) of interactive media production and we are uncertain whether any form, in-house production or specialised firms, will even dominate in the future. But we do see signs of a polarisation of in-house interactive media operations among the larger Swedish firms and government agencies. Some organisations were early adopters of interactive media use and production, make a large part of it themselves, have increased their involvement and predict this will continue. Other organisations adopted interactive media use later, and although they have increased their number of employees they have decreased their involvement and predict that this will continue in the future.

Technical innovations, standardisations, increased knowledge and inclusion of simpler forms of interactive media solutions in regular operating systems, like Microsoft Office, may change the customer basis somewhat as some smaller organisations start to develop their own solutions. But the types of solutions that are possible to develop this way are very limited, mainly consisting of static web pages, something that specialised interactive media producers are hardly able to charge customers for even today.

We have not been able to detect the underlying factors and mechanisms that cause the trend towards a polarisation of Swedish organisations' interactive media operations. Size can be an important factor although all organisations in the study have at least 200 employees. It might be that it is the very or extremely large organisations, those with more than a thousand, or perhaps tens of thousands, of employees that are the ones becoming more involved, while the modestly large ones with just above 200 employees are decreasing their involvement. As an example, Volvo's in-house production of interactive media and other IT solutions that started as a way to supply internal needs and integrate logistics and production with subcontractors, has grown to become an important practice that develops solutions for other companies and even takes over some of their IT support.

It is also likely that the main focus of the organisation and the industry it is in play an important role, although not necessarily in a straightforward way. Some types of organisations, like the larger banks, have been major users and producers of interactive media solutions in order to facilitate on-line and Internet banking. During the development process of these solutions, many of them had several hundred employees focusing on interactive media production, at least including testing. But these organisations were also early adopters of interactive media. The major Swedish bank SEB, for instance, started their earliest computerised services directed to businesses in

1979. Some of these firms are now cutting down or have already cut down their development expenses and are hoping to bring home the profits of their investments. Thereby, they might momentarily decrease some of their involvement in interactive media operations, at least until they start to develop the next generation of interactive media solutions. Organisations from other industries and sectors have been slower to adapt to interactive media and are currently in the midst of their development process. They might still be increasing their involvement for the coming couple of years. Even though more or less all Swedish organisations today use interactive media solutions (SCB 2003), not all of them have supplied all their demands for IT related solutions.

Whether the observed trends towards a polarisation, based on analyses of what respondents claim has happened and will happen with their in-house interactive media operations, will persist is too early to say. The focus of some organisations is more dependent on interactive media than others and will also in the future be more IT intensive overall. But at the same time, this does not necessarily mean that they will choose to handle their interactive media production internally, even if it is seen as strategically important and characterised by asset-specificity (Williamson 1994). We will have to wait a couple of years before answers can be given with more certainty.

15. The Design of the Study

The overall design of this study is based on the methodology that has been developed from experiences during prior and ongoing empirical studies within the MITIOR programme during the last five years. We do not claim that this methodology is superior to all alternatives. But given the financial and organisational possibilities and constraints, as well as the characteristics of the objects of study, a rapidly changing and dynamic field of which there is little prior knowledge and hence few standardised methods of sampling, survey design and data collection, we have found this methodology to be an efficient working solution.

Questionnaire Design

The questionnaire used in this study is based on the 2001 study of interactive media producers (Sandberg and Augustsson 2002), which in turn is based on the previous study (Sandberg 1998). Although both preceding studies are concerned with the production of interactive media, in the present study the areas of interest as well as the intended respondents differ. The prior studies focused solely on specialised interactive media producers aimed at a broad description of a range of areas. The present study has been directed to all kinds of organisations, but aimed at a particular set of activities that usually are only of a limited scope within each firm. In this study, interactive media production is a minor activity for most organisations that generally focus on other areas. As a result, the questionnaire has been thoroughly revised and modified to suit the areas of interest, as well as intended respondents. Still, the purpose has been to facilitate comparisons between the current and previous studies.

The questionnaire was divided into two parts. The first half was aimed at firms that produce their own interactive media solutions, either fully or parts of it. The second half was aimed at firms that only order, administrate and/or maintain interactive media solutions. A compromised version of the questionnaire was during the end of the data collection period sent out to non-respondents in order to get at least some basic information on a selection of questions from the two parts described above. As a result, the number of responses differs between questions in the survey (see below).

Several draft versions of the questionnaire were tested on people who have similar working tasks as the intended respondents, before the final version was constructed. Because NIWL itself has in-house production of interactive media, we had the possibility to continuously get valuable feedback on draft versions from some of the employees working there. The areas tested were mainly the relevance of questions, the formulation of questions and answer categories, and the time it took to complete the questionnaire.

Sampling

The purpose of this study has been to investigate the internal production, sub-contracting and ordering of interactive media solutions made by Swedish organisations in general, regardless of what their main area of activity is. An assumption was that in-house production of interactive media would be more common among larger organisations (measured as number of employees), since they have sufficient internal demand for it and financial capacities to facilitate such production (economies of scale). Therefore, a lower limit of size was set at 200 employees.

A second criterion for selection was to eliminate work places since our experiences from prior studies show that there is a high risk of double entries. Interactive media, like some other supportive functions, is usually organised at the company level. If several work places are included in the sample, there is a risk that all of them answer for the organisation as a whole. This can occur even though work places are excluded since organisations with no visible connection (i.e. different names, organisational numbers, geographical location, etc.) might be part of the same organisation. To prevent this, one of the first questions asked was whether or not the organisation that the questionnaire was sent to was the appropriate one to answer for, and gave respondents the possibility to suggest another organisation.

The sample was made using UC's (*Upplysningscentralens*) database of Swedish organisations, UC-Select. UC-Select is a database tool developed by Swedish banks and other financial institutions originally intended for credit rating and other financial information. There were two main reasons for choosing the UC-Select database above alternative sources, such as Statistics Sweden's 'Företagsregister'. First of all, it was much cheaper than using Statistics Sweden. Second, because we received a copy of the UC-Select database on a CD-ROM, we would be able to add data about specific companies in our sample after the survey was completed. The total database of UC contains roughly 650,000 organisations. This is lower than Statistics Sweden's database, which at the moment contained about 842,000 organisations and is generally thought to be among the most comprehensive for Sweden. Although there is some discrepancy between the two databases to the disadvantage of UC, the difference is most likely much smaller for the kind of organisations included in the present study. It is more likely that small organisations, as well as those 'less formal' are excluded from databases. A comparison between the SCB and UC databases has shown no systematic bias for the population of organisations aimed at in this study. As a result, we have used the SCB database to calculate the total size of interactive media operations in terms of employees and capital[50]. When the above criteria regarding size and organisational status were introduced, 1,581 organisations remained. A random sample of 800 organisations, about 50 per cent, was made and our survey questionnaires were sent to them.

[50] The SCB database lists 1,781 organisations with more than 200 employees and the UC-database 1,581, a difference of 200 organisations or 12.7 per cent.

Classification and Labelling

One of the major problems in our IM-2001 study was that the activity was not recognised as an industrial classification in official trade and industry statistics (the SNI-codes used by, among others, Statistics Sweden) that made it impossible to draw samples from existing databases.

In this study, the matter of industrial classification is less of a problem since we investigate a sample of all Swedish organisations in general. There is another problem, however, connected to classification and labelling, which affects the results of this study. Interactive media production is not the main activity within any of the organisations studied here. It might be significant and some organisations are actually largely involved in interactive media production and similar activities, but for the most part interactive media operations are a minor concern compared to the main activities of the organisation. For this reason, some organisations have only limited knowledge of interactive media. In some cases, the organisations' only encounter with production or ordering of interactive media might have been the purchase of their current website. Previous studies have shown that the lack of knowledge among customers is a significant constraint for interactive media producers (Sandberg and Augustsson 2002). We received feedback from respondents during the process of data collection saying that certain questions were too detailed or complex for them to answer.

This complication has two negative consequences for the study. First, some organisations claim that they do not use interactive media solutions at all, even though we know, from investigating the Internet, that they have at least a website. This means that the occurrence of interactive media use among Swedish organisations is underestimated. Nearly a quarter of the organisations in the study claim that they do not use interactive media at all. In reality, the figure is most likely lower than this since we know that nearly 100 per cent do have a website (SCB 2003). Second, since the organisations are no experts on interactive media, the quality of the answers in the questionnaire given here might be lower than that from specialised interactive media producing companies. A visible sign of this is that the levels of 'do not know' answers are higher in this study than in our IM-2001 survey (Sandberg and Augustsson 2002).

Three strategies were used to limit these problems. First, organisations that claimed not to use interactive media at all were checked to see whether they have a website or not. If this was the case, they were contacted and we explained what interactive media is and asked them to fill in a new questionnaire. This made it possible to correct the classification of a number of organisations that earlier claimed not to use interactive media. Second, we addressed all questionnaires to the person responsible for IT operations within the organisation ('*IT-ansvarig*'). That person can be expected to have good knowledge about the organisation's interactive media operations. According to our results, roughly 75 per cent of those that filled in the questionnaires had occupations equivalent to IT manager. Third, a shorter and in some parts less detailed version of the questionnaire was sent out in order to facilitate an answer from respondents with less advanced knowledge of interactive media. As the response rates below show, this was the questionnaire most respondents used.

Clearly, none of the strategies used are fool proof. A website is not the only type of interactive media solution an organisation might have, IT managers might confuse interactive media with other related functions such as technical support, or general computer and network maintenance. Finally, the limited version of the questionnaire omits valuable information. Still, we argue that it has limited the negative effects of respondents' possibly limited knowledge about interactive media to the extent that the results presented here are valid.

Data Collection

The process of data-collection took place between October 2001 and February 2002. All questionnaires were sent out by mail and included a prepaid response envelope. The first round of surveys were sent out in October 2001 and slightly modified reminders, including new questionnaires where sent out in November and December 2001[51]. Incoming responses where collected, classified and stored by members of the MITIOR programme and then handed over to ActionData, who handled the coding of the material.

Results and Response Rate

Each questionnaire gave the respondents the possibility to state the role of interactive media production within their organisation, choosing one out of four options. First, that the organisation did all of their interactive media production themselves. Second, that they produce some parts of interactive media solutions themselves but subcontract the rest. Third, that they do not produce any interactive media solutions but order, administrate and/or maintain such solutions. Fourth, that the organisations neither develop/administrate nor use interactive media solutions. Organisations that marked the first or second alternative were asked to answer the complete first part of the questionnaire. Those that marked the third alternative filled in the complete second part of the questionnaire. Those that marked the fourth option where only asked whether or not they would like to know the results of the study.

370 organisations (46 per cent) of the 800 organisations in the sample responded to the survey, either in whole or part or by stating that they had no interactive media. 30 organisations (eight per cent) produce all of their own interactive media solutions. 117 organisations (32 per cent) produce some of their interactive media solutions, while subcontracting the rest. 138 organisations (37 per cent) do not produce any interactive media but order, maintain and/or use such solutions. 85 of organisations (23 per cent) said they do not use any interactive media at all. The response rate and classifications are shown in table 2.

51 Despite extensive testing, the first version of the questionnaire contained some minor errors. We also decided to cut some questions that did not give any useful information according to preliminary analyses based on early responses.

Table 2. Response rates and classification of organisations according to interactive media production and use.

Respondents	Number of organisations	per cent
Produce all them selves	30	8.1
Produce some them selves	117	31.6
Purchase, maintain and use	138	37.3
Do not use at all	85	23.0
Total	370	100

Source: Augustsson & Sandberg (2004)

The figures above show the number of organisations that responded to the survey in any form, not the number of respondents for each question. Organisations that answer that they do not use interactive media at all do not answer any of the subsequent questions. As stated above, the survey was divided into two parts. Firms that produce interactive media solutions, either all or parts of them were asked to answer the first 55 questions, and those that only order, use and/or maintain such solutions answer questions 60-82 (56-59 do not exist). Moreover, some respondents have only filled in a shorter questionnaire containing a selection of the questions in the original questionnaire. As a result, response rates are almost never equivalent to the total number of organisations that responded to the survey. Thus, the low figures reported for some results are not only due to internal non-responses, it is often mainly because respondents *should not* fill in the question. Levels of internal non-responses were in fact very low for the majority of questions.

Analysis of Non-respondents

One of the benefits of using the UC-Select database is that it makes it possible to analyse whether non-respondents differ from respondents, i.e. if the results are biased. No significant differences could be found between the sample and the population, apart from the previously described over representation of government agencies and under representation of firms, indicating that the respondents are representative for the UC-Select database. It would naturally have been most interesting to compare whether the distribution of interactive media production and use presented in table 2 is similar for respondents and the total population, but at the same time it is logically the one thing one can seldom test statistically (if the distribution for the population is known there is no reason to perform the study). It may be assumed that respondents who do use or produce interactive media have a higher interest in answering than those who do not. But since the questionnaire gave respondents the possibility of replying that they do not use interactive media at all with just a minor effort (tick one box and put the envelope in the mail), we believe that this risk is limited.

Concluding Remarks on Methodology

As with all organisation-level surveys, this one has some limitations. We are fully aware of them and have been able to prevent and in some cases also overcome many of them. We consistently report the limitations and uncertainties throughout the report, in order to facilitate the readers' possibilities of making their own judgements. We are therefore confident that the results reported here are valid, given the limitations mentioned.

Summary

Augustsson F & Sandberg Å (2004) *Interactive Media in Swedish Organisations. In-house Production and Purchase of Internet and Multimedia Solutions in Swedish Firms and Government Agencies*. Arbetsliv i Omvandling 2004:9. Arbetslivsinstitutet, Stockholm.

This report contains a presentation of results from the first national organisation-level survey of in-house production, subcontracting and purchasing of Internet and multimedia solutions among larger Swedish firms and government agencies.

In two previous national surveys conducted 1997 and 2001, we have investigated interactive media production in the much talked about Internet and multimedia firms of the 'new economy'. Here, we turn to a parallel but much less talked about development that has occurred during the same period: the growth and organisation of in-house Internet and multimedia operations within larger Swedish organisations in the 'old economy'. The report is based on a comprehensive questionnaire answered by IT-managers in 370 Swedish firms and government agencies with more than 200 employees that produce, maintain, purchase and/or use interactive media solutions.

The report is mainly descriptive. Comparisons are however made with specialised interactive media producers in the new economy. This makes it possible to lay the foundation and develop hypotheses for answering questions regarding to what extent it is the practice or the organisational setting that decides who will carry out the job, how it will be done and the outcome in terms of working and employment conditions. The practice is the production of interactive media solutions, the organisational settings are large Swedish organisations in general with in-house production versus specialised firms that produce for external customers.

Among the areas covered are: gender and age composition, educational levels and competence development, levels of unionisation, working time, overtime and overtime compensation. Results are also presented on the extent and organisation of interactive media production, as well as the reasons why organisations choose to produce, subcontract or purchase interactive media solutions.

The findings show that in-house interactive media operations in organisations in general started at roughly the same time as specialised firms and that the extent of in-house operations is probably larger than the more visible IT and multimedia firms, that there are differences in the composition of the workforce, and that e.g. working time, sickness absenteeism and levels of competence development differ between the two groups of employees. It is concluded that for employment and working conditions the organisational setting is here more important than the type of production and technology.

Sammanfattning

Augustsson F & Sandberg Å (2004) *Interactive Media in Swedish Organisations. In-house Production and Purchase of Internet and Multimedia Solutions in Swedish Firms and Government Agencies*. Arbetsliv i Omvandling 2004:9. Arbetslivsinstitutet, Stockholm.

I rapporten presenteras resultat från den första nationella enkätundersökningen på organisationsnivå av intern produktion, utläggning och inköp av Internet och multimedialösningar inom svenska företag och myndigheter.

Vi har undersökt produktionen av interaktiva medier i de omtalade Internet- och multimediaföretagen i den 'nya ekonomin' i två tidigare enkätundersökningar genomförda 1997 och 2001. Här fokuserar vi på en parallell men mindre omtalad utveckling som har skett under samma period: framväxt och organisering av interna Internet- och multimediaverksamheter inom större svenska organisationer i den 'gamla ekonomin'. Rapporten är baserad på en omfattande enkät besvarad av IT-ansvariga i 370 svenska företag och myndigheter med fler än 200 anställda som producerar, underhåller, köper och/eller använder interaktiva medielösningar.

Rapporten är i huvudsak deskriptiv, men vi gör jämförelser med de specialiserade interaktiva medieproducenterna i den nya ekonomin. Det gör det möjligt att lägga grunden för och utveckla hypoteser för att besvara frågor rörande i vilken utsträckning det är verksamheten eller den organisatoriska hemvisten som avgör vem som kommer att utföra arbetet, hur det kommer att utföras och vad resultatet blir ifråga om arbets- och anställningsförhållanden. Verksamheten är att producera interaktiva medier och den organisatoriska hemvisten är större svenska organisationer med intern produktion jämfört med specialiserade företag som producerar lösningar för externa kunder.

Bland de områden som berörs finns: köns- och ålderssammansättning, utbildningsnivåer och kompetensutveckling, facklig anslutningsgrad, arbetstid, övertid och övertidsersättning. Vi presenterar också resultat angående omfattning och organisering av intern interaktiv medieproduktion, liksom orsakerna bakom organisationers val att producera, lägga ut eller köpa in interaktiva medielösningar.

Resultaten visar att intern produktion av interaktiva medier i organisationer generellt sett startade samtidigt som hos specialiserade interaktiva medieproducenter och att omfattningen av intern produktion troligen är större än den som sker bland de mer synliga IT- och multimediaföretagen, att det finns skillnader i arbetskraftens sammansättning, och att till exempel arbetstider, sjukfrånvaro och omfattning av kompetensutveckling skiljer sig mellan de två grupperna av anställda. Slutsatsen är att den organisatoriska hemvisten spelar en större roll än typen av produktion och tekniken för anställnings- och arbetsförhållanden.

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Table Appendix

Table 1. Starting year of production of interactive media solutions among organisations that produce all or some of their interactive media. Mean and median.

	Mean	Median	Do not know	n
Produce all	1996	1997	37%	30
Produce some	1997	1997	33%	117
Total	1997	1997	35%	147

Table 2. Starting year of use of interactive media solutions for organisations that produce all or some and those that purchase all interactive media. Mean and median.

	Mean	Median	Do not know	n
Produce all	1996	1998	33%	30
Produce some	1996	1997	33%	117
Purchase	1998	1998	32%	138
Total	1997	1998	33%	285

Table 3. Activities inherent in interactive media production. Percentage of organisations that usually produce themselves, sometimes produce themselves and those who usually subcontract them.

Comment: Only organisations that produce all or parts of interactive media internally.

	Yes (usually)	Sometimes (can)	Subcontract (do not)	No	Total	n
Content research	52	30	8	10	100	145
Concept, storyboard	51	24	9	16	100	144
Graphic design	47	32	21	0	100	146
Programming	44	33	22	1	100	147
Copy	40	26	17	17	100	144
Illustration/graphics	34	35	22	9	100	146
Project management	34	36	7	23	100	146
Photo	30	39	21	10	100	145
Systems development	23	42	29	5	100	143
Educating customers	20	30	17	33	100	146
Strategic consulting	18	38	15	29	100	141
Animations	16	18	25	41	100	145
Sound/music	7	13	23	57	100	144
Video/film	6	16	30	48	100	146
Providing actors	5	11	26	58	100	146

Table 4. Activities performed in connection to the actual production of interactive media. Percentage of organisations that mostly produce themselves, sometimes produce themselves and those who mostly subcontract the respective activities

	Yes (usually)	Sometimes (can)	Subcontract (usually)	No (do not)	Do not know	Total	n
Publishing on Internet/portal	69	17	2	12	0	100	84
Providing access to server space webhosting, etc.	25	12	63	0	0	100	84
E-commerce, B2B	17	16	10	54	4	100	82
Publishing, distribution of CD-ROMs, DVDs etc.	13	20	11	56	0	100	84
E-commerce for private consumers, (B2C)	11	6	4	77	2	100	83
Physical manufacturing of CD-ROM/DVD	11	22	20	46	1	100	84
Performing e-learning	10	20	15	50	5	100	81

Table 5. The extent to which organisations' interactive media productions/solution the last twelve months fall within different categories.

Comment: Organisations that produce all or parts of their interactive media internally. Both own productions and subcontracted ones are included.

	Large part	Some part	No part	Do not know	Total	n
Presentations of companies/ organisations/authorities	36	51	8	5	100	131
Advertising, PR	25	52	18	5	100	124
Education	13	44	36	7	100	126
Entertainment, games	1	7	87	5	100	112
News	25	45	24	6	100	121
Information databases	32	47	16	5	100	130
E-commerce (incl. financial service) for private consumers (B2C)	3	14	78	5	100	116
E-commerce, business to business (B2B)	12	28	55	5	100	118
Other interactive services	11	37	35	17	100	114
Other business solutions in digital environment	6	28	54	12	100	112
Other	10	3	80	7	100	116

Table 6. The number of times organisations' have ordered interactive media production within different categories during the last twelve months.

Comment: Organisations that do not produce any of their interactive media internally.

	Yes, several	Yes, occasionally	No	Do not know	Total	n
Presentations of companies/ organisations/authorities	7	43	44	6	100	118
Advertising, PR	12	42	41	5	100	114
Education	13	38	47	2	100	110
Entertainment, games	3	5	86	6	100	102
News	3	17	75	5	100	104
Information databases	1	52	43	4	100	108
E-commerce (incl. financial service) for private consumers (B2C)	4	9	84	3	100	102
E-commerce, business to business (B2B)	6	15	74	5	100	106
Other interactive services	6	26	55	13	100	105
Other business solutions in digital environment	4	26	59	11	100	98
Other	12	84	4	0	100	57

Table 7. Importance of different factors in the decision to subcontract parts of interactive media production.

	Crucial	Very important	Important	Less important	Not important at all	Do not know	n
Increase the service towards end users	5	32	46	14	3	0	37
Obtain technical competence	6	45	40	9	0	0	35
Obtain design competence	5	35	41	14	5	0	37
Cost reduction of interactive media	0	11	36	44	6	3	36
Increase cost control	3	11	43	27	13	3	37
Increase computer security	8	27	8	30	24	3	37
Increase operation reliability	0	43	24	22	11	0	37
Possibility to concentrate on core competencies	21	54	19	3	3	0	37

Table 8. Importance of different factors in the decision not to outsource parts of interactive media production.

	Crucial	Very important	Important	Less important	Not important at all	Do not know	n
The operations can be done cheaper internally	10	50	32	7	1	0	81
Safety of delivery, ability to meet deadlines	8	31	40	15	5	1	80
Easier update	19	56	18	6	1	0	80
The functions constitute competitive advantages/ of strategic importance	10	26	18	21	20	5	81
Outsourcing would weaken integration with other functions	10	28	15	24	18	5	81
The operations demands very good knowledge/ about our activities	12	49	23	11	5	0	81
Decreased motivation among our interactive media personnel caused by outsourcing	3	26	25	35	9	2	80
Strengthening of computer security	8	36	16	24	16	0	80
Difficult to coordinate suppliers with our internal interactive media organisation	3	25	16	31	15	10	80
Bad experience of outsourcing	0	14	8	17	29	32	63
Other important factor	6	0	0	0	50	44	18

Table 9. Importance of different factors in the decision not to produce interactive media internally at all.

	Crucial	Very important	Important	Less important	Not important at all	Do not know	n
Increase service towards end users	7	43	33	8	2	7	86
Obtain technical competence	16	42	27	7	4	4	85
Obtain design competence	12	39	29	11	5	4	83
Cost reduction	2	19	37	25	6	11	85
Increase cost control	4	20	41	23	4	4	85
Increase computer security e.g. better protection against 'hacking' and viruses	6	27	36	16	7	8	84
Better operation reliability	5	42	32	12	3	6	85
Possibility to focus on core competencies	24	52	16	2	5	1	86

Table 10. Changes in the organisation of interactive media production in the last twelve months (since late 2000) among those organisations that subcontract part of the production.

Changes	Per cent
We now make almost everything ourselves	5
We now make more ourselves	11
We now outsource more than we used to	10
We now outsource almost everything	1
No changes	68
We have started our interactive media activities during the period	2
Do not know	3
Total	100

n=147

Table 11. Changes in the organisation of interactive media production in the last twelve months (since late 2000) among organisations that purchase all interactive media.

Changes	Per cent
We earlier made everything ourselves	5
We earlier made some parts ourselves	12
No changes	70
We have started our interactive media activity during the period	10
Do not know	3
Total	100

n=87

Table 12. Planned changes in the organisation of interactive media production in the coming twelve months (until late 2002) among those organisations that subcontract.

Planned changes	Per cent
We plan to outsource all	1
We plan to outsource more	10
We plan to make more ourselves	12
We plan to make everything ourselves	1
We plan to close down our interactive media activity	1
No changes	61
Do not know	14
Total	100

n=147

Table 13. Planned changes in the organisation of interactive media production in the coming twelve months (until late 2002) among those organisations that purchase all interactive media solutions.

Planned changes	Per cent
We plan to make some production ourselves	19
We plan to close down our interactive media activity	1
No changes	67
Do not know	13
Total	100

n=87

Table 14. Internal groups involved in the development/decision making regarding the last interactive media solution. More than one answer possible.

Internal groups	Per cent of organisations	n
Management	40	140
Information department	70	140
IT department of IT/responsible	81	140
Managers of affected end users	51	140
Direct representatives of end users	29	140
Unions	1	140
End users themselves	22	140
Others	9	140
Do not know	6	146

Table 15. Internal groups involved in the purchase of the last interactive media solution. More than one answer possible.

Internal groups	Per cent of organisations	n
Management	52	135
Information department	51	136
IT department	77	136
Managers of affected end users	30	135
Direct representatives of end users	18	135
Unions	1	136
End users themselves	15	136
Others	10	136
Do not know	60	136

Table 16. Internal organisation of interactive media production.

Internal groups	Per cent of companies
As projects	38
As a separate department	15
As a network between different departments	34
Included in another department	13
Do not know	0
Total	100

n=76

Table 17. Satisfaction with different factors in the last subcontracted interactive media solution.

	Very Pleased	Pleased	Neither pleased nor displeased	Displeased	Very Displeased	Do not know
Increase service towards end users	14	44	22	0	6	14
Obtain technical competence	8	53	31	0	0	8
Obtain design competence	3	44	39	0	6	8
Cost reduction	3	22	50	6	0	19
Increase cost control	3	22	44	17	0	14
Increase computer security	6	25	38	6	0	25
Increase operation reliability	0	36	47	6	0	11
Possibility to focus on core competencies	17	44	25	3	0	11
Overall costs of the assignment	6	39	39	8	0	8
The functionality of the solution delivered	14	39	27	6	6	8

n=36

Table 18. Overall satisfaction with the last subcontracted/purchased interactive media solution.

	Very Pleased	Pleased	Neither pleased nor displeased	Displeased	Very Displeased	Do not know	n
Subcontracted	16	48	19	5	2	10	80
Purchased	7	65	23	2	1	2	131

Table 19. Satisfaction with different factors in the last purchased interactive media solution.

	Very Pleased	Pleased	Neither pleased nor displeased	Displeased	Very Displeased	Do not know	n
Increased service towards end users	6	61	19	3	0	11	85
Obtained technical competence	6	54	27	2	0	11	85
Obtained design competence	8	49	31	1	0	11	85
Cost reduction	1	19	56	2	1	21	84
Increased cost control	0	32	46	2	0	20	84
Increased computer security	1	35	44	1	0	19	84
Increased operation reliability	2	45	32	4	1	16	83
Possibility to focus on core competencies	16	51	24	2	0	7	83
Overall costs of the assignment	5	36	44	7	0	8	85
The functionality of the solution delivered	7	61	20	6	0	6	85

Table 20. Type of company that organisations used as the main supplier the last time they *subcontracted* all or parts of an interactive media solution. More than one answer possible.

	Per cent	n
Interactive media specialist	47	79
Advertising, PR	19	80
Printing, graphics production	4	80
Design	1	80
Software developer	10	80
Video/film/TV-production/photo	10	80
Audio, music production	0	80
General IT consulting firm	35	80
General organisation/management/business consulting	5	83
General education	4	80
Other	3	80
Do not know	3	81

Table 21. Type of company that organisations used as a main supplier the last time they *purchased* an interactive media solution. More than one answer possible.

	Per cent	n
Interactive media specialist	44	134
Advertising, PR	21	134
Printing, graphics production	4	134
Design	5	134
Software developer	8	134
Video/film/TV-production/photo	3	134
Audio, music production	1	134
General IT consulting firm	29	134
General organisation/management/business consulting	2	134
General education	9	134
Other	4	134
Do not know	2	136

Table 22. The strategy used the last time organisations subcontracted all or parts of an interactive media solution.

Strategy	Per cent
We ordered everything from one supplier	66
We ordered the necessary parts from different suppliers and assembled the solutions ourselves	16
Other	8
Do not know	10
Total	100

n=38

Table 23. The strategy used the last time organisations purchased all or parts of an interactive media solution.

Strategy	Per cent
We ordered everything from one supplier	73
We ordered necessary parts from different suppliers and assembled the solutions ourselves	21
Other	4
Do not know	2
Total	100

n=84

Table 24. Organisations' strategy for finding collaborators the last time they subcontracted an interactive media solution.

Strategy	Per cent
Followed pre-existing framework agreement with our previous supplier	37
Turned to our usual suppliers (without framework agreement)	37
Turned to other/ new suppliers	23
Other	3
Do not know	0
Total	100

n=38

Table 25. Organisations' strategy for finding collaborators the last time they purchased an interactive media solution.

Strategy	Per cent
Followed pre-existing framework agreement with our previous supplier	29
Turned to our usual suppliers (without framework agreement)	41
Turned to other/ new suppliers	23
Other	6
Do not know	1
Total	100

n=82

Table 26. Value of interactive media subcontracts and purchases during the last 12 months (roughly 2001). Mean and median for organisations.

	Mean	Median	n
Subcontract	1,784,457	200,000	35
Purchase	1,753,260	250,000	50

Table 27. Estimated value of interactive media subcontracts and purchase for the coming 12 months. Mean and median for organisations.

	Mean	Median	n
Subcontract	2,438,421	400,000	19
Purchase	1,170,869	200,000	23

Table 28. Number of companies that organisations have stable *outsourcing* relations with for interactive media production. Mean and median.

	Mean	Median	n
Subcontracting	24	20	27
Purchasing	1	1	79

Table 29. Relative dependencies between organisations and the companies they outsource interactive media production to, or purchase from. Own organisation.

	Subcontract	Purchase
No problem (we easily find new suppliers)	38	45
Problems of transition (it would take some time to build up new co-operations)	55	53
Large problems (we would have a hard time finding equivalent competence/co-operation)	7	0
Do not know	0	2
Total	100	100

n=29/56

Table 30. Relative dependencies between organisations and the companies they outsource interactive media production to, or purchase from. Other company.

	Subcontract	Purchase
No problem (easily find new suppliers)	52	45
Problems of transition (it would take some time to build up new co operations)	31	26
Large problems (would be hard to find equivalent competence/ cooperation)	0	0
Do not know	17	29
Total	100	100

n=29/58

Table 31. Geographical location of companies that organisations outsource interactive media production to, or purchase from. Mean values.

	Subcontract Mean	Purchase Mean
Within the same municipality	58	55
Within other parts of Sweden	41	40
Outside Sweden	1	5
Total	100	100

n=61/114

Table 32. Proportion of interactive media production for internal and external use during the last twelve months. Mean and median.

	Mean	Median
For use within the own organisation	87	100
Delivery of interactive media solutions to external customers	13	0

n=73

Table 33. Average number of employees working with interactive media within Swedish organisations that **produce everything** in-house in late 1998, 2000 and 2001. Mean and median.

Comment: Outlier deleted. Maximum value set at 500 employees

	Number of employees		
Year	Mean	Median	n
1998	4.0	1	23
2000	6.6	2	23
2001	11.5	2	22

Table 34. Average number of employees working with interactive media within Swedish organisations that **produce some** in-house in late 1998, 2000 and 2001. Mean and median.

	Number of employees		
Year	Mean	Median	n
1998	4.6	1	88
2000	6.9	2	95
2001	9.3	3	90

Table 35. Average number of employees working with interactive media within Swedish organisations that **purchase all** solutions in late 1998, 2000 and 2001. Mean and median.

Comment: Outlier deleted. Maximum value set at 300 employees

	Number of employees		
Year	Mean	Median	n
1998	0.9	0	61
2000	1.8	1	69
2001	2.2	2	71

Table 36. Average number of newly hired permanent employees, employees that quit and those laid off in the last 12 months. Mean and median.

	Mean	Median
Newly hired permanent	0.96	0
Employees that quit	0.28	0
Employees that were laid off	0	0

n=69

Table 37. Planned changes in the number of employees in the coming 12 months. Proportion of organisations that plan to hire more employees, those that do not plan any changes and those that plan to decrease the number of employees.

	Per cent
Plan to hire	6
Do not plan to hire	83
Plan to reduce personnel	0
Do not know	11
Total	100

n=80

Table 38. Average number of consultants active in interactive media production, maintenance and purchase within organisations that produce all or parts and those that purchase all interactive media.

	Number of consultants	n
Produce	0.92	60
Purchase	0	78

Table 39. Percentage of women employees within interactive media.

	Mean	Median
Women	43	50

n=117

Table 40. Gender of highest-ranking manager in charge of interactive media production.

	Per cent
Men	56
Women	36
Do not know	8
Total	100

Table 41. Percentage of temporary employees working with interactive media production within organisations.

	Mean	Median	Do not know	n
Temporary employees	2	0	14	85

Table 42. Distribution of employees focusing on interactive media production in different types of activities.

	Per cent
IT/Programming	34
Design and content production	45
Project management	21
Total	100

n=104

Table 43. Age distribution of workers focusing on interactive media.

Age	Per cent
29 or below	15
30-39	39
40-49	27
50 or above	19
Total	100

n=66

Table 44. Actual working time of full-time employees focusing on interactive media.

Hours a week	Per cent
40 or below	36
40-49	53
50-59	10
60 or above	1
Total	100

n=100

Table 45. Proportion of organisations with systematic records of overtime.

	Per cent
Have systematic records	84
Do not have systematic records	12
Do not know	4
Total	100

n=82

Table 46. Occurrence of economic compensation for overtime.

	Have compensation
Yes	81
No	15
Do not know	4
Total	100

n=81

Table 47. Occurrence of compensation for overtime in time off.

	Percent
Yes, based on formal documentation	77
Yes, handled informally by employees	17
No	5
Do not know	1
Total	100

n=76

Table 48. The importance of different competencies for employees focusing on interactive media.

	Crucial	Very important	Important	Less important	Do not know	Total	n
Knowledge of own business area	18	55	19	4	4	100	141
Knowledge of the needs in our own organisation	23	66	6	1	4	100	140
Width in interactive media area/generalist	5	37	40	14	4	100	135
Depth in design/ content work	4	31	41	20	4	100	140
Depth in IT/programming	4	28	34	31	3	100	141
Social competence, capacity to network	11	53	24	8	4	100	140
Initiative	19	64	12	2	3	100	138
Other	18	9	18	46	9	100	11

Table 49. The importance of different sources of employees' current competence within interactive media.

	Crucial	Very important	Important	Less important	Do not know	Total	n
Formal education (University, secondary school etc.)	5	39	36	17	3	100	78
Experience from other companies (incl. training there)	4	43	30	21	1	100	79
Education paid by current employer (e.g. courses)	6	54	35	4	1	100	81
Personal learning at the current company (incl. practical experience and guidance)	8	66	24	1	1	100	79

Table 50. Highest level of formal education among employees focusing on interactive media.

Level	Per cent
University or equivalent, 3 years minimum	37
Other post-secondary school education	41
Secondary school	20
Elementary school	2
Total	100

n=59

Table 51. Offers of time annually for interactive media employees' competence development.

Level	Per cent
Yes, equally. Certain number of days annually, or equivalent sum of money	6
Yes. Number of days decided in individual competence plans	70
No	13
Do not know	11
Total	100

n=143

Table 52. Average annual time offered to interactive media employees for competence development.

Comment: Only organisations offering time for competence development included.

Time	Percent
1-5 days/ 1 week	41
6-10 days/ 2 weeks	30
11-15 days/ 3 weeks	4
More than 15 days/ 3 weeks	61
Do not know	24
Total	100

n=108

Table 53. Average proportion of employees focusing on interactive media within organisations that used the time for competence development offered to them maximally in 2000.

Comment: Only organisations offering time for competence development included.

Per cent of employees	Per cent of organisations
0-19%	7
20-39%	8
40-59%	11
60-79%	14
80-100%	25
Do not know	35
Total	100
Mean value	62 %

n=110

Table 54. Strategies used by organisations to ensure employees focusing on interactive media have sufficient time for competence development. Comment: Only organisations offering time for competence development included.

Strategy	Per cent
Predetermined period of time	1
Time planned in gradually	30
Performance demands set lower	21
Other methods	3
No particular strategy used	40
Do not know	5
Total	100

n=67

Table 55. Amount of competence development, measured as working time, spent on the job (in connection to daily work) and off the job (formal training, courses, etc).

Learning situation	Per cent
On the job	75
Off the job	25
Total	100

n=50

Table 56. Average monthly salary for different groups of interactive media employees. SEK/month before tax, including result based portion. Mean and median of companies. Unweighted.

Groups of employees	Mean	Median	n
IT/Programming	24,340	24,750	38
Design and content production	22,300	22,000	45
Project management	27,700	28,000	41
Total	24,780	24,750	124

Table 57. Average monthly salary for different groups of interactive media employees. SEK/month before tax, including result based portion. Mean and median, weighted based on the number of employees within each group/company.

Groups of employees	Mean	Median	n
IT/Programming	23,470	22,000	65
Design and content production	22,410	22,000	83
Project management	29,100	30,000	54
Total	24,990	22,000	202

Table 58. Average levels of sick leave within organisations, measured as average annual number of working days per employee.

	Absenteeism	n
Annual number of days/employee	3.58	40
Do not know (%)	12	44

Table 59. Proportion of organisations with agreements with the Swedish company health care.

	Per cent
Yes	94
No	4
Do not know	2
Total	100

n=83

Table 60. Aspects covered in agreement with the Swedish company health care.

Comment: Only organisations that have an agreement included. More than one answer possible.

	Included	Not included	Total
Health care and treatment	73	27	100
Advice on work environment and work conditions	69	31	100
Other	3	97	100
Do not know	14	86	100

n=78

Table 61. Proportion of organisations that have collective agreements that cover employees focusing on interactive media production.

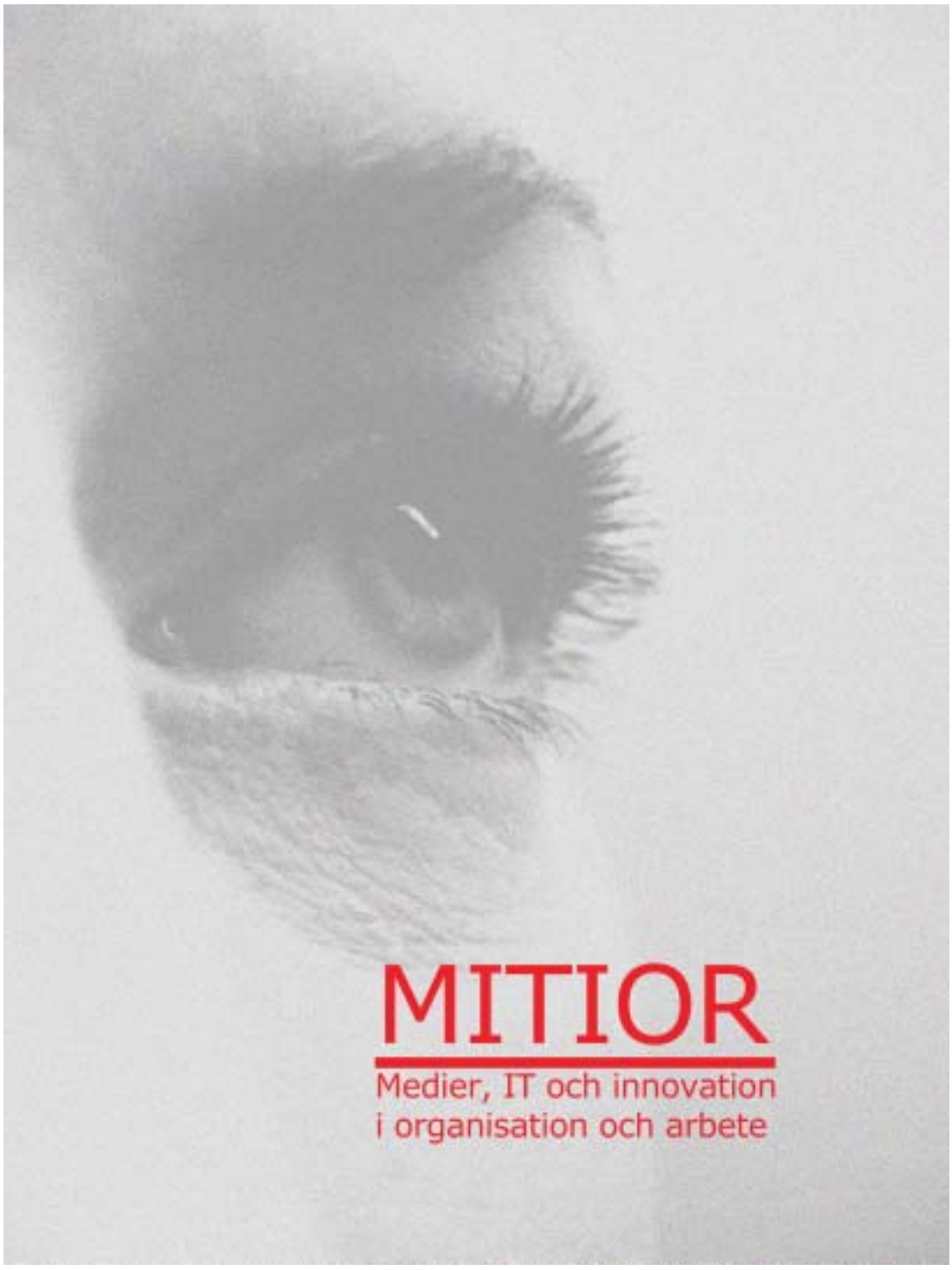
	Per cent
Have collective agreement	67
Do not have collective agreement	8
Do not know	25
Total	100

n=131

Table 62. Proportion of organisations that have employees focusing on interactive media production that are unionised.

	Per cent
Yes, at least one unionised	77
No, no one unionised	6
Do not know	17
Total	100

n=83


MITIOR
Medier, IT och innovation
i organisation och arbete

MITIOR

Media, IT and innovation
in organisation and work

MITIOR is a research programme concerning organisation and work within the IT and media sectors and other activities where IT is central. The programme focuses on the one hand on development and design of IT solutions, and on the other the use of these solutions in other sectors. A fundamental question concerns the possibilities of combining good jobs and efficient enterprises. The MITIOR programme is located at the Work and Health department at the National Institute for Working life and at KTH, the Royal Institute of Technology in Stockholm and its Center for user-oriented IT design (CID), part of the department of Numerical Analysis and Computer Science (NADA)

The research team currently consists of professor Åke Sandberg (research leader), doctoral student Fredrik Augustsson and research assistant Atty Burke. Prior members include investigator Anne Lintala and research assistants Karin Darin, Tommy Lindkvist, Sanja Magdalenic, Gabriela Maguid and Emma Movitz.

Studies within the MITIOR programme

Projects currently focus on interactive media producers in Sweden and IT companies in Kista Science City, i.e. companies that develop different kinds of IT solutions. Our aim is to subsequently also investigate companies and jobs with intensive IT use, such as call centres and digital journalism

Interactive Media: Internet and multimedia

Most projects to date have concerned the development of companies and jobs within interactive media, i.e. the production of Internet and multimedia solutions. Three comprehensive management surveys have been conducted and reported on (Sandberg 1998, Sandberg and Augustsson 2002, Augustsson and Sandberg 2004), as well as a more limited interview investigation concerning social integration (Darin 2003). The following studies are currently ongoing and due for publication late 2004 or 2005.

- A survey directed at individual workers within approximately 60 interactive media production companies.
- A new company level survey directed at the management of the 60 companies.
- International exchange and co-operation with researchers within the field, in joint publications and book projects and in planned comparative studies.

IT and Telecom Companies in Kista

A survey to the managements of IT and telecom companies in Kista was conducted in 2003/2004 and a preliminary report has been published. The report, now being revised, covers the companies' business, networks, competencies and the strengths and weaknesses of Kista as a

place of IT production. An ambition is to carry out a connected survey to workers within these companies.

An interview-based study of the organisation of knowledge sharing and inter-organisational collaborations between firms, local universities and authorities is currently being conducted.

Digital Journalism and Call Centres

We are following research on call centres at the NIWL and elsewhere. Human resource management, organisation, work and employment conditions are being investigated through surveys and case studies in cooperation with the Mid-Sweden University and as part of an international network, the Global Call Center Benchmarking Study.

Case studies of work within digital news journalism and web publishing have been conducted and published. The ambition is continued studies on the theme of IT, Internet and professional journalistic work in media companies under changing market conditions.

Integration and Analysis

Apart from reports from the empirical studies, the researchers perform summaries and analyses in different forms. A fourth reworked edition of the textbook *Ledning för alla?*, on management in 'the new working life' was published by SNS Förlag in the fall of 2003. Articles and book chapters on specific topics and tendencies such as employability, organisations' purchase of services and the productive potential of 'good work' are published in books and journals.

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Information and Contact

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KTH VETENSKAP OCH KONST
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Arbetslivsinstitutet
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