

# Worlds of Work

Results from the New Worlds of Work Research Report 2007

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*Final report*

*May 1, 2008*



## Preface

Many have argued that we are entering the knowledge society. But what does it mean? Do we understand the transformation our society is experiencing? Probably not but one way to increase our understanding of this societal transformation is to study what most people do every day: work. Work is an illusive concept, especially knowledge work, as it is hard to observe what people really do when they do their knowledge work.

In 2007 we started our research on the New World of Work. The research project was initiated by Microsoft Nederland B.V. We started our research with finding a sound definition of 'new work'. However the result was surprising as it appeared hard to find such a definition. Moreover, if we wanted to define 'new work' we were left with the question how to define 'old work'. It became clear that is no such a clear-cut distinction could be made between old and new work. We then decided to study work from a multi-dimensional perspective. The results of our research are presented in this report.

Allowing researchers to study 'intimate' business work processes and –activities at the employee level is not without risks. The results of the research can be disappointing. Moreover it requires involvement and participation from all employees at all hierarchical levels in the organization. Finally, the results may create expectations on the side of the employees that need to be fulfilled by the organizations.

For these reasons we want thank the following people for taking these risks: Theo Rinsema, Gonnie Been, Robert Tempels, Ineke Hoekman-van Hassel, Toby Wilson, Marret Leloux, Dik Bijl, Ilco van der Bie, Daphne Faber (Microsoft Nederland B.V.); Piet van Schijndel, Henny van Egmond, Saskia de Ruijter, Harrie Vollaard, M. Aarts, I. de Jong, J. Jacobs, E.M. Coppers, D.C. Ligthart, K. Tarry-Kruger (Rabobank Nederland); Jacques Teuwen, Harry van Herpen, Liscia Kruse (De Unie); Tom van den Akker (Kamer van Koophandel Rotterdam).

May 1, 2008  
Rotterdam

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## Introduction

Is there a best workplace? Can we create workplace environments in which people are innovative, productive, flexible, and satisfied at the same time? Researchers and practitioners have been searching for the ideal workplace for decades now. In 1995 David I. Levine published his book “Reinventing the Workplace”. In his book Levine presents case studies and evidence to show that employee involvement in the workplace can significantly increase both productivity and employee satisfaction. The findings were not brand new but very interesting to the American business world. Free markets, as we know them in the US, are biased against high employee-involvement because they are thought to increase bargaining costs. Levine shows that it is not easy to change to a high employee involvement policy as the bias is embedded into the broader institutional context of the American society.

Now, 13 years later, there is still a need for reinventing the workplace. However, the reason for this is not only the lack of employee involvement. In his paper Robert P. Gephart (2002) states that we have entered a widely heralded ‘new age’ where work organizations are undergoing profound changes. The workplace has to be reinvented again as work has changed in many respects since 1995. In 1995 the Internet was only in its infancy phase, mobile devices were luxury goods, computer usage was limited in most countries, and the terms knowledge and mobile work were hardly used in the business and academic world.

Many authors have envisioned a future of work or a new world of work. Recent visionary books emphasize the impact of new media on work. Work is no longer bound to time and space. However the more we research modern work, the more we become aware of the importance of the social and physical context of work. In his book “The Brave New World of Work” (2000) Ulrich Beck states that there is no antithesis to work, which means that there is no alternative or opposite to this concept. Work is omnipotent. It relates to the macro-institutions of our society and to our daily micro-behavior. *We cannot escape from work.*

In May 2005, Microsoft released the White Paper “Digital Workstyles: The New World of Work” (Microsoft, 2005a). This paper provides an overview of trends affecting work, workers and work environment and the role of ICT in an economy where knowledge is the most important asset of organizations and institutions. The New World of Work is a vision of how work will evolve and this perspective how work can be seen as a dynamic concept, where no real end-state can be defined.

In this document we report the first results over 2007 of our World of Work-project. This research was initiated at the request of Microsoft Netherlands in 2006. Later, two other Dutch organizations were willing to participate in this World of Work project, Rabobank and the labor union De Unie. At the start of our research project, Microsoft and Rabobank had plans to introduce new work concepts in the organization while De Unie introduced these new work concepts already in 2003. The research was carried out by a team of senior researchers and students of the Rotterdam School of Management at the Erasmus University.

The results we present in this document are based on the data we collected from a survey and from individual case studies. For the survey we developed a questionnaire which was sent out to a large number of employees in the three case organizations. The advantage of this dual data collection approach is complementarity. The survey data give precise information on how employees value their work in the three case organizations while the case descriptions provide contextual information about the organizations of work and their plans to introduce new work concepts. In our research we focus on knowledge work.

The questionnaire we developed includes old and new dimensions of work. The old dimensions were developed in the 1970s and the 1980s. The new dimensions reflect the more recent changes in knowledge work, like team collaboration, mobility, transparency, empowerment, technology usage.

In addition, detailed research was conducted by the students of the Rotterdam School of Management on *Digital Work Styles, A Validation Study of the House of Quality Key Performance Indicators. The Case of De Unie's online union, Workplace Technologies, Enterprise Infrastructure, and New Work concepts, Managerial Strategies in Introducing New Work Concepts, and Studying Multiple Media Use: a Network Multiplexity Approach.*

The results we present in this document should be treated with caution. First, the three case organizations differ in many respects (software company, bank, labor union). In the near future we hope to include more organizations in the same industry. Second, although we tested the questionnaire several times, there is always room for improvement. Finding better scales, especially for the new work dimensions, will help to increase the power of our research instrument. The survey will also be used for the after-measurements, that are executed in 2008.

The structure of this report is as follows. In Chapter 1 we discuss trends, developments and changes in the thinking on knowledge work. In Chapter 2 we develop our Worlds of Work research framework. In Chapter 3 we discuss and analyze the results from the surveys and the case studies. In Chapter 4 we summarize the detailed research which was carried out by the students. Chapter 5 discusses the general conclusions, limitation and future directions of our research.



# Chapter 1. Knowledge and Work

## 1.1 Introduction

Many organizations are searching for alternative ways to organize work and to redesign workplaces for several reasons. The advancements in information and communication technologies are conceived to be one of the major causes of change in the nature of work. To assess the influence of ICT on society, organizations and work, new metaphors like Being Digital, Digital Economy, Digital Places, Virtual Workspaces and Digital Workspaces have been coined (Overbeek et al, 2005). These metaphors mainly address the impact of the explosive growth of information and information technologies. However, there are many other major drivers as well, like individualization, globalization, and changing demographics (Rasmus, 2005). The most important question is therefore whether organizations are ready to deal with those great changes in the global society. A precondition for answering this question is awareness. Are organizations aware of the potential impact of those global drivers of change? And if they are, how can they respond to those changes?

When we look at the literature regarding work design we find a striking gap between the scientific literature and the visionary, and mostly utopian, books about the future of work. The academic literature is focused and detailed with respect to assessing the influence of particular factors on a few aspects of work. The visionary books, on the other hand, draw big pictures and extrapolate to futures on rather weak assumptions. In our research we aim to bridge this gap by first discussing and studying the grand changes (this chapter) and by developing a comprehensive research framework in which new dimensions of knowledge and mobile work are included.

## 1.2 Bringing Work Back In

In 2005, Bill Gates launched a new vision on the future of work and the role new software technologies can play. In this speech on the New World of Work, Gates argued that over the last decades software has been able to build bridges between disconnected islands of information. However, today access to information is no longer the main problem. The new challenge is how to make sense of all this information that tends to overload the modern information worker. In 2003, the world produced 800 MB of information for each human being on the world. Over 90% of this information is created in a digital form and will increasingly become available via Internet. “To tackle these challenges,” Gates said, “information-worker software needs to evolve. It's time to build on the capabilities we have today and create software that helps information workers adapt and thrive in an ever-changing work environment.” The future of work and work spaces is not only a major challenge for the world's largest software company but for almost any company and any employee in the world.

Although this may sound self-evident there is little recognition in the business world of the workplace as a strategic asset that should be used to support business goals (Kamschroer et al, 2007). Recent research shows that less than 5% of US companies have aligned workplaces to

their corporate strategies to improve corporate performance (see Kamschroer et al, 2007). Only recently, have large technology firms (e.g. IBM, Intel, and Philips) started to de-emphasize the role of technology and accentuate their service orientation to customers and employees. The New Work of World-vision, expressed by Microsoft chairman Bill Gates illustrates this new service orientation.

In the academic world, work has been studied for decades. In the 1970s and 1980s an enormous stream of research was conducted by sociologists and psychologists of work. An important research topic was the impact of the introduction of new technologies on work and the implications for the employees. Surprisingly, management and management information scholars appeared to ignore the amount of research that has been done in the field of work. One consequence is that while the nature and the practice of work have changed dramatically over the last two decades, our theories and concepts for understanding work have become outdated (Sinha and Van de Ven, 2005, Child, 2005). One interesting example is the problems we still have in understanding how information and communication technologies impact corporate performance and work. This is the so called IT Productivity Paradox. This paradox refers to the lack of a demonstrable relationship between IT investments and corporate performance. The detailed research of Brynjolffson and Hitt (2000) showed that increase in IT productivity was only achieved when investments in IT were accompanied with complementary investments in organizational change, training and work redesign (Derdick et al, 2003). Recently management and organizational researchers have encouraged scholars to return to the frontier of organization science by reopening the study of work design (Sinha and Van de Ven, 2005; Barley and Kunda, 2001).

Refocusing again on work practices as building blocks for organizational and strategic analyses will have severe repercussions for management and management scholars. It redirects attention from abstract theories and concepts of organizations to a multidimensional perspective on individual and collaborative work practices. For our research on the New World of Work we developed a multidimensional framework to investigate a correlate of factors influencing work in different organizations. Moreover, we made a first attempt to relate these to a few performance indicators (flexibility, job satisfaction, innovativeness, and productivity).

### **1.3 Knowledge society: changing perspectives**

There have been numerous attempts to describe the nature of the transition of society from an industrial to information- or knowledge one. This transition is accompanied with a series of new concepts which have the prefix information or knowledge in common (knowledge intensive organizations, knowledge/information work, knowledge/information workers, and knowledge/information technologies). Because of the elusiveness of the word knowledge predictions and analyses of the knowledge society differ in many respects. The perspectives vary from utopian to dystopian, from normative to descriptive, and from deterministic to constructivist views.

To characterize the advent of the knowledge society as a revolutionary shift from the industrial to the post-industrial is to ignore the evolutionary and emergent character of this societal transformation (Stehr, 2001). The knowledge society as it was described and analyzed in the 1960s and 1970s differs in many respects from the knowledge society as we experience it today. Moreover, as we explain later, the knowledge society is not just-dimensional social configuration (Stehr, 2001). There are many knowledge societies as institutional, technological, economic, social forces drives societies into diverging modes of exploring their knowledge resources (UESCO, 2005). As we will discuss next the concept of knowledge society has changed over time in the literature.

#### 1.4 First Wave of Knowledge Societies

The Austrian-American economist First Machlup was one of the first scholars who emphasized the importance of knowledge as an economic resource for modern societies. In his magnum opus *The Production and Distribution of Knowledge in the United States* (1962), he introduced concepts such asknowledge industry and knowledge production to describe and predict the relative contribution of the knowledge production to GNP in the US. According to Machlup, knowledge occupations were growing more rapidly than others, first the clerical occupation, then managerial and executive occupations and followed by professional and technical personnel. With his work the term Information Economy was born.

Only a few years (1966) later, Robert E. Lane published his paper on the decline of politics and ideology in a knowledgeable society. Like Machlup, Lane is concerned with the rapid growth and impact of scientific knowledge in society and the way common sense thinking was replaced scientific reasoning. He analyzes the implications of this 'second scientific revolution' in the domain of politics and ideology.

In the management literature, Peter Drucker is mostly quoted for having launched the terms knowledge society and knowledge worker. Drucker (1969) identified this new class of professional and technical personnel as 'knowledge workers'.

One of the most provocative, early futurist studies was Daniel Bell's *The Coming of Post-Industrial Society* (1973). The leading thought in Bell's utopian view was the primacy of knowledge in future society. All important issues in society, he claimed, are epistemic by nature. Like Machlup and Lane, Bell had the theoretical knowledge in mind when discussing the characteristics of the post-industrial society (which he used interchangeably with the knowledge society). Knowledge was primarily scientific knowledge that was certified and internally validated within relatively closed expert communities of scientists and professionals). This positivistic knowledge production model is sometimes called the 'veridical truth-model'.

According to Bell, there are two reasons for arguing that the post-industrial society is a knowledge society. The first is that the sources of innovation are increasingly derivative from research and development. The second is that the proportion of the GNP and the share of employment is increasing in the knowledge field (see Machlup). In contrast to the industrial

age, which adhered to concepts like machines, control, and analysis, the knowledge society age emphasizes synthesis, programming, and manipulation (of information). It means that society is no longer organized around the coordination of individuals and machines for the production of commodities but around knowledge, produced by a new class of professional and technical personnel. (Böhme and Stehr, 1986).

More recent writings on the knowledge society do not differ principally in their analysis of the distinction between the industrial and knowledge society. For example, Castells explains this contrast as follows: industrialism is oriented toward economic growth that is toward maximizing output; informationalism is oriented (...) toward the accumulation of knowledge and towards higher levels of complexity in information processing” (1996: 17). Boisot (1988) distinguishes between energy and information economies. The former deals primarily with physical objects and processes, with things that have a finite extension in space and in time. They do not proliferate uncontrollably. Information economies, on the other hand, are characterized by nonlinearities and emergent properties and are becoming a ‘far-from-equilibrium phenomenon’ (Boisot, 1988: 262).

### 1.5 Second Wave of Knowledge Societies

During the first wave of writing about the knowledge society the importance of the growth and the penetration of knowledge in society were stressed. Knowledge was primarily viewed as scientific and theoretical knowledge, closely connected to the rapid growing communities of scientists and professionals. The second wave of writings on the knowledge societies differ in many respects with the first wave. The first difference was of course prominent role that information and communication technologies, especially the Internet and World Wide Web, have come to play in the knowledge society. Bell already envisioned, in a rudimentary way, the production of ‘intellectual technologies’ in the knowledge society aiming at the substitution of intuitive judgments, based algorithms and problem-solving rules. These intellectual (smart) technologies help to coordinate the complex production of goods and services.

A second important difference is the changed conception of knowledge. Knowledge was no longer solely confined to the ‘veridical truth’, the theoretical and scientific knowledge of the scientists and professionals but broadened and deepened to what can be viewed as a public resource. One of the important consequences of the changing conceptions of knowledge was that it changed the relationship between experts and lay people. Nowotny has called this the ‘democratization of expertise’.

The knowledge societies of the first wave have emphasized the scientific and theoretical knowledge as the ‘axial principal of society’ (Bell, 1973). This scientific knowledge was produced and applied by relatively closed expert communities of scientists, technical and administrative professionals. During the shift towards the second wave knowledge societies in the late 1980s and 1990s profound changes in the perspectives on knowledge and knowledge production took place. These changing perspectives had also important consequences for the identification of knowledge workers.

The veridical truth model of the first wave knowledge societies was hardly contested by people outside the expert communities. The first wave knowledge society was not only a highly advanced society but also a 'risk society' (Beck, 1992). Large and small disasters, like Tsjernobil, Harrisburg, Bopal, Challenger Space shuttle, the Brent Spar Affair, and the controversies around nuclear power revealed vulnerability of the knowledge society. The risks of modern society, as Beck puts it, escape perception and are localized in the sphere of physical and chemical formulas (like toxins in foodstuff, nuclear threat).

During the shift towards the second wave of knowledge societies a change took place in the expert-layman relationship. The increasing level of education of the lay public, the global diffusion of information via the Internet and other (mass) media, the extension of possibilities for participation in many public policy domains like health care, environment, energy, security and military defence and telecommunication contributed to the emancipation of the lay man in society relative to the high social status of the expert. As a consequence, the expertise of the expert became *contested* by the highly educated layman, second opinion research and organized countervailing evidence (Marres and De Vries, 2002; Nowotny, 2003)). Risks, as Beck (1992) argues, broke the sciences' monopoly on rationality. Because of the immanent risk of modern society in which the veridical truth model reigns supreme Beck (1992) calls for initiating reflexive modernization. By this he means that scepticism should be extended to the foundations and hazards of scientific work and science.

In a similar way, Gibbons et al (1994: 14) observed the emergence of a socially distributed knowledge production system. This distributed knowledge production system is tending towards the form of a global web whose numbers of inter-connections are being continuously expanded by the creation of new sites of production (Gibbons et al, 1994: 14). New telecommunication and computer technologies are pivotal to facilitate communications within this knowledge production network. This new way of knowledge production is called Mode 2 and is characterized by knowledge production in the context of application, transdisciplinarity, heterogeneity and organizational diversity, social accountability and reflexivity, and quality control. It contrasts Mode I knowledge production (disciplinary, produced within the traditional cognitive context), which were the main characteristic for the first wave knowledge societies.

The second change in the perspective on knowledge can be called the rise of the *tacit knowledge paradigm*. In the veridical truth model of knowledge of the first wave societies only one dimension of knowledge was emphasized, the theoretical, codified knowledge. Tacit knowledge refers to the non-articulated knowledge which is personal and contextual and rooted in experience. Acquiring tacit knowledge occurs through interaction, imitation and demonstration but without using language (Nonaka, 1995: 62). Master-apprenticeships relations are frequently mentioned as a form of tacit knowledge transfer. A precondition for sharing tacit knowledge is a form of shared experience.

One important characteristic of tacit knowledge is its 'stickiness' (Von Hippel, 1994, Szulanski, 2003). The stickiness of knowledge refers to the incremental costs to transfer

knowledge from one context to another. In the process of codification knowledge is giving form to phenomena and experience (Boisot, 1998: 41). It is important to note that codification is primarily a selection process in which competing perceptual and conceptual alternatives are included or excluded. The act of selection is therefore often a conflict-laden process (Boisot, 1998: 44). Codification is also a complexity reducing process as only a few data are selected to represent particular phenomena and experiences. Codified knowledge is abstracted from associated emotions and specific contexts in which shared experiences are embedded (Nonaka, 1995: 63). The big advantage of codified knowledge is, of course, that it can easily be accessed and transferred from one context to another at low costs (especially when ICT is used). The problem with codified knowledge, however, is that it needs to be re-embedded and appropriated to the context in which it will be used.

The acknowledgement of the tacit dimension of knowledge has a profound impact on the dominant knowledge production model and the expert-layman relationship. This relationship was derived from the veridical truth model which exclusively emphasized codified, abstracted knowledge and was legitimized by the certification granting institutions, the universities. The tacit knowledge paradigm does not deny the importance of codified, theoretical knowledge but argues that this codified knowledge does not make sense without considering the complementary tacit dimension of knowledge. Experts legitimize their status on the basis of their abstracted knowledge which can hardly be accessed by the lay person (Abbott, 1988). The tacit dimension puts constraints on the codifiability of knowledge and thereby on the visibility of the expertise of the expert.

Closely associated with these developments was the fast growing interest of the business world (and business and management scholars) in the 1990s for managing knowledge as a new production factor. It gave rise to a re-formulation of the theory of the firm, the *knowledge based view*, and a new business discipline, knowledge management.

## 1.6 Knowledge in Companies

In the 1980s and 1990s the implications of the increasing role of knowledge in societies was picked up in the business and management literature. The grand visions and macro analyses made by the early writers of the knowledge society lacked the specificity to apply these ideas at the firm level (Spender, 1996). Nelson and Winter (1982) coined the concepts of organizational routines and organizational capabilities, and discussed the implications of the tacit dimension of knowledge for the firm. Since then many strategy scholars have moved away from traditional neo-classical theories and institutional theories of the firm. At the same time, they started to embrace the so called knowledge based theory of the firm. We will not discuss here the extensive theoretical debate about this new conception of the firm. It suffices to state that knowledge came to be viewed as the most important strategic resource and the basis for competitive advantage. It meant the migration of competitive advantage away from tangible towards intangible assets (Teece, 2000). One main challenge became how to identify, process, generate, use and protect this strategic knowledge resource. This new perspective, together with the new developments in the field of information and telecommunication technologies, also gave rise to a new management discipline, knowledge management

(Hedlund, 1994, Nonaka, 1994). A second main implication of this theoretical shift in the perspective on the nature of the firm is that is to find a new concept of control. The traditional control concept originated from industrial companies geared to mass production and mass labour. Productivity was dependent on narrow, task-based specialization and workers had to be monitored and controlled (Burton Jones, 1999: 157). A third main implication was the complexity of managing boundaries within and between companies. Knowledge is by nature an elusive resource which cannot be measured, monitored and managed in the traditional way.

There is a clear political overtone in the critical views on the knowledge society. These views not only emphasize the non-neutrality of expertise but also call for democratizing expertise (Nowotny, 2003). It implies that new sources of legitimacy should be generated, whereby expertise is not solely validated by fellow-experts but by heterogeneously composed audiences, which will result in socially robust knowledge.

If the contemporary society is a knowledge society, then almost by definition, knowledge workers and knowledge intensive firms are the constituents of the society (Hislop, 2005: 215). However, as we showed in the last section, the perspective on the knowledge society has changed over the last two decades, away from the veridical truth model of knowledge and away from the traditional knowledge worker as experts. The question then arises what the implications are of this changed perspective on the knowledge society for defining knowledge work, knowledge workers, and knowledge intensive firms.

### 1.7 Knowledge Intensive Firms

The knowledge based view of the firm applies to all kinds of companies. Knowledge intensive firms (KIFs) are frequently viewed as a category of organization that differs from capital- and labour-intensive firms (Starbuck, 1992, Alvesson, 2001; Hislop, 2005). However the distinction between knowledge-intensive and non-knowledge intensive is not self-evident as all types of work appear to involve knowledge (Swart and Kinnie, 2003). Definitions of KIFs have emphasized different aspects: input, output, nature of knowledge work, workforce composition. In the input-definitions firms are classified by their resources (input) they rely on for the production of qualified goods and services. In output-definition the product or service that is produced is stressed. Typical examples are law and accounting firms, management, engineering, and ICT consultancy firms, R&D departments, and high-tech companies (Swart and Kinni, 2003). Other definitions have emphasized the high training and education qualification of the workforce in KIFs, Alvesson (2000) provides a widely used definition of knowledge-intensive firms: 'companies where most work can be said to be of an intellectual nature and where well-qualified employees form the major part of the workforce' (p. 1101). Alvesson (2003) mentions seven characteristics of KIFs that specify their nature of work and the ways knowledge is managed and organized:

1. **Knowledge Base.** KIFs are characterized by a strong knowledge base and a strong emphasis on competence development. This knowledge base specifically refers to the cognitive skills of employees and is rooted in the work culture as shared collective understanding. It is hard to make a clear distinction between the conceptualization

- and execution of work and it does not leave much room for management control of the work top-down.
2. **Autonomy.** Knowledge work includes the exercise of professional judgment in solving complex and often unique problems. Managers can only control at distance as they do not have the detailed knowledge and insight into these complex problems.
  3. **Organizational Forms.** Many knowledge-intensive firms deviate from stand hierarchical organizational structures. Most KIFs have move towards flat, networking, ad hoc-organized organizational structures.
  4. **Extensive Communication.** Most KIFs are communication-intensive. The complex and open-ended nature of knowledge work requires intensive knowledge sharing within and between groups of knowledge workers. In order to process the information flows, knowledge workers use new information and communication technologies extensively.
  5. **Client Relations.** Much knowledge work is client-centred work. Problem solving takes place in processes of mutual adjustment with the client. However, in typical R&D environments, like high-tech and pharmaceutical companies, there exist hardly any client relationships.
  6. **Quality Assessments.** As knowledge work is often complex and unique it appears hard to assess the quality and to development quality measurement instruments.
  7. **Asymmetrical Power Relations.** The expert knowledge provides knowledge workers with asymmetrical power relations. Although this power base is decreasing in the second wave knowledge society, knowledge workers still exercise power over non-experts.

It is clear that this characterization is not determinative as it is hard to draw a strict demarcation line between knowledge- intensive- and non-knowledge intensive firms. As we will show later, the case organizations we studied differ with respect to the KIF-characterization as presented by Alvesson (2001).

### 1.8 Knowledge work and knowledge workers

In the first wave knowledge societies, knowledge workers are viewed as a relatively small group of experts that control a more or less esoteric knowledge domain. As the knowledge society becomes more functionally differentiated more experts are needed to work in these highly specialized knowledge domains.

Hislop (2005: 217) defines knowledge workers as 'people whose work is primarily intellectual and non-routine in nature and involves the utilization and creation of knowledge' (p. 217).

In his impressive analysis of the transformation of modern society towards a global web in which economic activity no longer corresponds with national borders, Robert Reich (1991) sees three broad categories of work emerging: routine production services, in-person services, and symbolic analytic services. Routine production services refer to the kind of jobs that are characterized by repetitive tasks, typical for the high-volume enterprise. These routine production jobs also include many information-processing jobs, held by the so-called 'food soldiers of the information economy'. They are stationed in the back offices and routinely



process data into information systems. As in the management regimes of the industrial society, these workers are guided and controlled by standard procedures and codified rules. In-person service jobs also entail simple and repetitive tasks. Like the routine production workers they are closely supervised and not very highly educated. The difference with the latter category is that services must be provided person-to person, and consequently cannot be done from a distance. This category includes retail sales workers, waiters and waitress, hotel workers, hospital attendants, nursing-home aides, taxi drivers, secretaries, hairdressers, auto mechanics, security guards, etc.

The third category is symbolic-analytic services. These refer to problem-solving, problem-identifying, and strategic-brokering activities. Like the routine production activities these can be traded worldwide. The big difference however is that symbolic-analytic services cannot, because of the idiosyncratic and complex nature of the tasks, be standardized. Included in this category are scientists, engineers, investment bankers, lawyers, consultants in various domains, information systems specialists, journalists, university professors etc. These workers solve, identify, and broker problems by manipulating symbols by using analytical tools and are not, like the in-person service workers, bound to their beneficiaries. Symbolic analysts are not controlled or monitored in the traditional way but work rather autonomously in associations and partnerships. They often work alone or in small teams. Team work is often critical to their work.

The knowledge work of the symbolic analysts differs from the knowledge work of professionals of the industrial society in at least one important respect. The traditional professional mastered a particular domain of knowledge. This knowledge has been accumulated and codified over time and could be mastered during university education and professional career. Symbolic analysts do not master a knowledge domain but manipulate and creatively use, and broker knowledge to identify and solve problems.

Reich's analysis of the changing and emerging nature of jobs is interesting for our analysis for different reasons. First, knowledge no longer becomes associated with power. Symbolic analysts are not valued or paid for the expertise they possess but for their effectiveness in identifying and solving problems and brokering knowledge. Applying knowledge is more important than having knowledge.

Secondly, this category of knowledge workers fits well into the Mode II of knowledge production as described by Gibson et al (1994). This view also differs importantly from analyses in which knowledge workers are defined by their 'stock of expertise', referring to an esoteric knowledge domain (Starbuck, 1992). Instead, the knowledge work of this group of symbolic analysts refers to a competence. The training and education of symbolic analysts should aim at acquiring this competence and should entail four basic skills: abstraction, system thinking, experimentation, and collaboration.

As we will show in chapter 3, the three case organizations we selected for our research differ in knowledge intensity.

## 1.9 Mobile Work

Mobility of work has become an important dimension of (knowledge) work. Research on early forms of mobile work – telework – dates back to the 1970s. Interest in telework started as the oil crisis gave rise to growing concerns over gasoline consumption, long work commutes, and traffic congestion in major metropolitan areas. Since then telecommuting has been hailed as a pervasive route to create a flexible workforce for the knowledge economy and reduce home-work logistics. However, later studies on telework showed that neither time to commute, nor the distance of the commute were predictive for inducements for telework. In their review of the research on telework Bailey and Kurland (2002) demonstrate the paucity of the clear results up till now.

An important issue in telecommuting is how it affects the border between work and family life. A border can be defined as the line of demarcation between the segments of individuals' lives, and takes three forms: physical, temporal, and psychological (Clark, 2000). Physical borders divide the location between work and family. Temporal borders sequentially divide when work is done versus when people live their private lives. Psychological borders are rules created by individuals that determine when thinking patterns, behaviour patterns and emotions fit to the domain of work or to the domain of family.

In the traditional work setting, work and family are often physically and temporally separated. Permeability and flexibility appear to have positive and negative spill-overs. Many authors on the knowledge society and mobility have predominantly emphasized the positive spill-overs, suggesting that employees can determine the location and time of work at their will. However, recent research on the impact of telework on Work Interference with Family (WIF) detects, though to an extent depending on the nature of the job, several negative work-life spill-over effects. In their study on employee flexibility in call centres and the software industry in the UK, Hyman et.al. (2004) found that positive spill-overs prevail for software developers. However, both groups of workers reported high levels of fatigue, exhaustion, and stress. Software developers enjoyed more autonomy but because of the mobile nature of their work they were more able and likely to bring work home. They work long hours (often without additional payments) to complete assignments. Moreover, these professionals experienced difficulty in 'switching off' work activities, and demarcating work-related problems from the family domain (Hyman e.a. 2003). Lowry and Moskos (2005) investigated the impact of the use of mobile phones on work and found positive and negative impacts on the work-life balance. The researchers conclude that at least work mobile phones are a 'double edge sword' (Lowry and Moskos, 2005). Interviewees mentioned that use of mobile phones provided by the employer increased their responsiveness to work-related demands. At the same time, they viewed the mobile phone as a positive tool for facilitating a balance between work and home life. However, the work mobile phone intruded into aspects of their home life; employees were often rung at all hours of the night for work-related matters. Moreover, the 'just-in-time' nature of mobile phones facilitated the preservation of organizational roles and power structures. Supervisors and managers indicated that they were able to 'virtually' monitor the progress of employees without temporal and spatial constraints.

These research results point at several paradoxes introduced by telework (Frissen, 1999). Increased employee control and autonomy over work is accompanied with increasing requirements of performance, set by the employer and the employee ('freedom paradox'). Similarly, more flexibility for the employee to organize working time is accompanied with an increase of work hours ('time paradox'). The permanent connectivity and traceability of digital information allows employees to work any time and any place, while also allowing supervisors to preserve power structures ('power paradox') (Frissen, 1999).

Limitations to the rapid diffusion of telework are also embedded in national cultures. A Dutch longitudinal investigation (1980-2000) on the impact of the diffusion of ICT (including Internet connections) on various social and cultural activities and traditions showed no significant changes in working time. The researchers looked at Internet usage at different moments of the day, on different days of the week. Contrary to what they hypothesized, they found that the widespread adoption of ICT/Internet connections did not break down the traditional 'collective rhythm' of the 9 to 5 working day (SCP, 2002).

In their review of the telework research, Bailey and Kurland (2002) call for a reconceptualization of telework and point at new directions for telework research. First, research should expand the research lens to include all parties who might be affected when an individual teleworks. This implies that a work system perspective (e.g. Shina and Van de Ven, 2005) is needed to understand the full impact of telework on organizations. The authors hypothesize a 'creeping impact' of teleworking employees on others in the organizations. Office-bound workers are expected to back up for the problems that arise in workflows and cannot be dealt with by the teleworker. Another important direction for research is studying the motivation for telework. Bailey and Kurland suggest that 'avoidance of interruptions' might be a primary motivation for employees to telework. Avoiding interruptions might increase the productivity of the employee in the short-term but may present adverse long-term consequences for the organization. The reason is that interruption at work constitutes opportunities for creativity and knowledge transfers. A third important direction is to study the potential impact of social and professional isolation (Cooper and Kurland, 2002). The more frequently employees telework, the more they become disconnected to the organizational culture.

Mobile work does not only refer to telework. The recent IDC-study Worldwide Mobile Worker 2007-2011 Forecast and Analysis expects the global mobile worker population to increase from 758.6 million in 2006 to more than 1.0 billion in 2011. It means that over 30% of the worldwide workforce is working mobile. In 2006 68% of the US workforce was working mobile. This percentage will increase to 75% in 2011. The mobility of the Japanese workforce will increase even faster, from 53% in 2006 to 80% in 2011.

Of course, mobile working is not a dichotomous variable. People work mobile to a greater or lesser degree. As we can learn from the mobile work quadrant below, telework is just one alternative. In the quadrant, different types of mobile working environments are

distinguished based on two dimensions: frequency of changing worker location and location (fixed vs. multiple) (Schaffers et al, 2006).

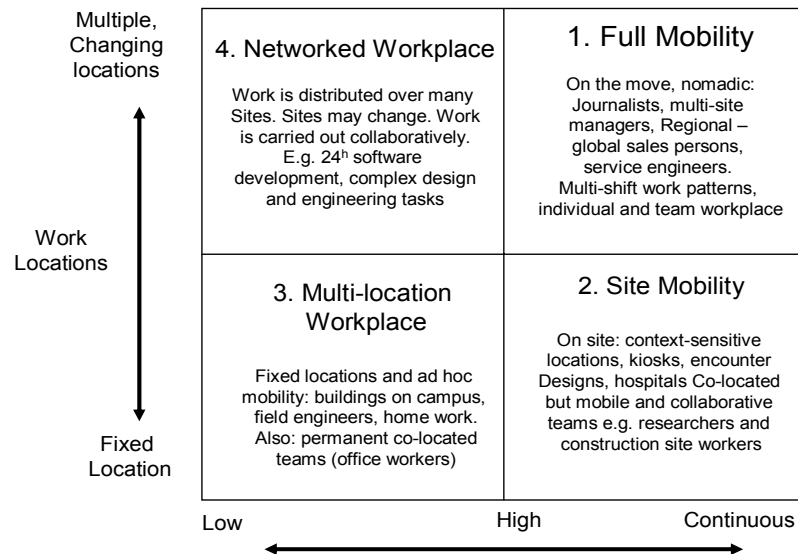


Figure 1: Mobile working environments categorization (source: Schaffers et al, 2006)

An important driver for the increasing interest in mobile work is the advancements in information and communication technologies. The proliferation of high speed networks, widespread public Wi-Fi hotspots, and fixed-mobile convergence (FMC) technology now allows employees to work from almost anywhere. Younger generations have higher comfort levels with technology in general but with remote access technologies and mobile devices in particular.

A recent comparative research in the United States, Germany and China, sponsored by Nokia (2005), indicates that businesses are integrating mobile technologies in varying forms and complexities with their It infrastructures. However, most organizations still underestimate the impact of mobile technologies on day-to-day operations of business. The research concludes that the workforce continues to drive technology adoption on its own terms in order to profit from increased productivity and connectivity.

### 1.10 Information and Communication Technologies

The impact and role of the ICT, and especially the Internet, in the current versions of the knowledge society can, because of its immersive character, hardly be overestimated. According to Boisot (1988: 210) ICT's main impact on the economy is the acceleration of the rate substitution of information for physical resources in human activity by capturing, processing, transmitting and storing data. Zuboff (1988) distinguishes information technology from the machine technology of the industrial age by emphasizing the *dual nature* of ICT. On the one hand, ICT, like the machine technology, can be applied to *automate* work operations that are replacing the human body with technology. The same processes can be performed

with more continuity and control. On the other hand, ICT can simultaneously generate information about the underlying productive and administrative processes. This is what Zuboff (1988) calls *informate*. In this process, new information is provided that can improve work processes. The automate and informate capacities are not opposites, but are hierarchically integrated. Informating build and derives from automating processes.

Boisot and Zuboff do not take into account the so called 'Internet capabilities' of ICT. Castells (1996, 2001) sees the network (Internet) as the defining and causing characteristic of the information age. Networks are organizing tools that are inherently flexible and adaptable. Castells de-emphasizes the centrality of knowledge and information as such but stresses the application of knowledge and information to knowledge generation and information processing/communication devices (1996: 32). The advent of new ICT brought forward a new technological paradigm. This paradigm is characterized by technologies that act on information (not vice versa), are pervasive in their impact, are spurring network formation, and are primarily flexible (Castells, 1996: 61-62).

Castells has been criticized for his deterministic view on the relationship between technology and society, according to which the rise of network society is a logical consequence of the qualities of ICT. Actually, he holds a soft-deterministic view when he explains that ICT is powerful and imposing in its materiality, but adaptive and open-ended in its historical development. Comprehensiveness, complexity and networking are decisive qualities of ICT. He supports Kranzberg's First Law: *technology is neither good, nor bad, nor is it neutral*. The dilemma of technological determinism is, according to Castells, a false problem, since technology is society, and society cannot be understood or represented without its technological tools (1996: 5).

There are many more ways to try to describe the potential impact of ICT on society. However, long-term consequences of ICT, whatever form it may take, will be unclear for decades (Cortada, 386). The main reason is that technology development is not an isolated force whose impact can be isolated from other global developments, like individualizations and globalization. This becomes even truer when ICT penetrates every sphere of life.

### 1.11 Workplace technologies

Information management scholars have conducted detailed research on the impact of information technologies on aspects of work and productivity. From this research we learn that the relationship between new technology, work, and productivity is complex and is moving away from simplistic and deterministic assumptions about the role of technology in organizations. Researchers have been puzzled for decades by the complexity of measuring the return of investments of information technologies (Saunders and Brynjolfsson, 2007). While IT-investments increased exponentially it appears still hard to show a relationship with an increase in productivity. MIT professor and later Nobel-prize winner Robert Solow concluded once that "you can see the computer age everywhere but in the productivity statistics" (Solow, 1987). After conducting many IT-productivity studies Strassman (1997) concluded in similar way that there is no demonstrable correlation between the financial performance of a

firm and the amount it spends on information technology. Recently, researchers have explored the relationship between IT investments and productivity in detail at the organization level and found positive correlations: Brynjolfsson and Hitt, (2003). They found strong evidence that complementary investments in (intangible) organizational capital have a major impact on returns to IT investments (see also Dedrick et al (2003). IT users themselves introduced many innovations in the way they did business.

Wanda Orlikowski, Professor of Information Technologies and Organization Studies at MIT's Sloan School of Management, showed in several studies how end-users and organizational culture significantly influence technology usage (Orlikowski, 1992). New information technologies are not just fixed artefacts to which users have to comply with but are open-ended and can be appropriated to different usages to particular practices. Most information and communication technologies are general purpose technologies which facilitate a range of possible interactions (Orlikowski, 1995). Or as Orlikowski (2000) puts it: "When users choose to use a technology, they are also choosing how to interact with technology."

This open-ended and general purpose nature of modern workplace technologies has important implications for the effectiveness and expected productivity of new technologies. For example, corporate intranets and knowledge management systems can be used to facilitate different knowledge management processes (Alavi and Leidner, 2001). The actual use of these systems depends on how end-users choose to use them and this may deviate seriously from the expected use by the management. Organizations differ in the extent to which they allow users to decide themselves how to use information and communication systems. Power plays and organizational politics can put limits to the freedom of technology choice (Markus, 1987). Technologies do not change organizations. In contrast, they often reflect organizational culture and organizational politics.

The rise of Web 2.0 technologies within the organization will pose new challenges to workplace innovations. These technologies will reinforce the end-user's capability to generate relevant information and to participate or create social networks that are relevant to their work.

### 1.12 Implementing Workplace Innovation

In this chapter we discussed how knowledge work and the (knowledge) work system has changed over the last decades. It shows that (knowledge) work is a multidimensional concept and that recent changes in knowledge work are adding new dimensions to work, such as team work, mobility, transparency, usage of new information and communication technology. Our discussion also shows that the coordination of knowledge becomes increasingly complex as well. Traditional, hierarchically organized work systems cannot meet the challenges of global competition, individualization of the workforce, short product life cycles of products and services, and the advancements in ICT. There is a need for alternative ways of organizing work.

The real challenge, however, is to translate all these changes into a new workplace design. Workplace innovations are often initiated by different motives, such as changing perceptions of workplace design (desk sharing, desk rotating, open office), decreasing real estate costs, investments and innovations of the IT infrastructure, and reducing travel time (Van der Voordt, 2003a). Over the last years many organization have experimented with introducing new work concepts. Research on workplace innovations is still limited (Van der Voordt, 2002). The limited research indicate that the most important success factors for workplace innovations are attitude and skills of employees, objectives and expectations of management, implementation strategy, and sophistication and professionalization of ICT services (Van der Voordt, 2003b). The BOSTI Associates (Bufalo Organization for Social and Technological Innovation) is one of the leading consultancy firms in workplace innovation. The company published a series of highly informative studies (BOSTI-studies) on the impact of workplace innovation on employee productivity and employee satisfaction. Communication and concentration appear to be highly relevant in the design of new workplaces. Workplace design should facilitate social interaction between employees and should at the same time prevent distraction from the workplace.

### 1.13 The Future of the Work System

Most studies on work have focused exclusively on individual jobs ('one person-one task'). This individual job approach is ignoring the organizational context in which jobs, tasks and workers are embedded (Brass, 1981). Following Shina and Van de Ven (2005) it is important to distinguish between organizational work and individual work (jobs). Individual work can be defined as the tasks an individual employee is appointed to by the organization. Organizational work can be defined as a set of activities that is undertaken to develop, produce, and deliver a product of a service (Shina and Van de Ven, 2005). A product can be both a physical and an information good. Work design refers to the set of the system of arrangements and procedures for organizing work. In individual work design these arrangements and procedures take place within the boundaries of the appointed task (job). Redesigning individual jobs directly influences the work of others. The boundaries of organizational and individual work are subjective to the negotiation between individual and organizational interests.

At the organizational level the activities are divided into sub activities to produce products and/or services. These products and services represent the complete ensemble of activities of the larger work system. Each set of sub activities is organized into a module which varies in complexity and size. The more complex the nature of activities within the module the harder it becomes to cleave the work into components. Coordinating the work system may create two types of problems. The first is the hierarchical decomposition problem which arises when work is split up into different hierarchal levels of responsibility. When work activities are divided into large numbers of relatively small and interdependent tasks this may give rise to multi layer coordination- and control problems. The second is the modularization problem which refers to the coordination of the relations between relatively large, complex and autonomous modules. For more complex work, like knowledge work, it is hard to determine

the point that work activities can be split up into modules. Moreover, it will become hard to integrate these rather autonomous modules into a larger work activity system.

In a recent article Malone and Laubacher (1998) coined the term *E-Lance Economy* to refer to the newly emerging way of organizing work. The fundamental unit of the e-lance economy is not the corporation but the individual. Tasks are not assigned and controlled by a stable chain of management but rather are carried out by autonomous or independent contractors. E-lancers connect into fluid and temporary networks to produce and sell goods and services. When the job is done, the networks dissolve again, whereas the e-lancers start seeking for new assignments. Of course, this view still applies to a small portion of the economy yet it is clear that larger parts are moving in this direction. In Figure 2 we show how the use of new media can facilitate the emergence of a new flexible work system.

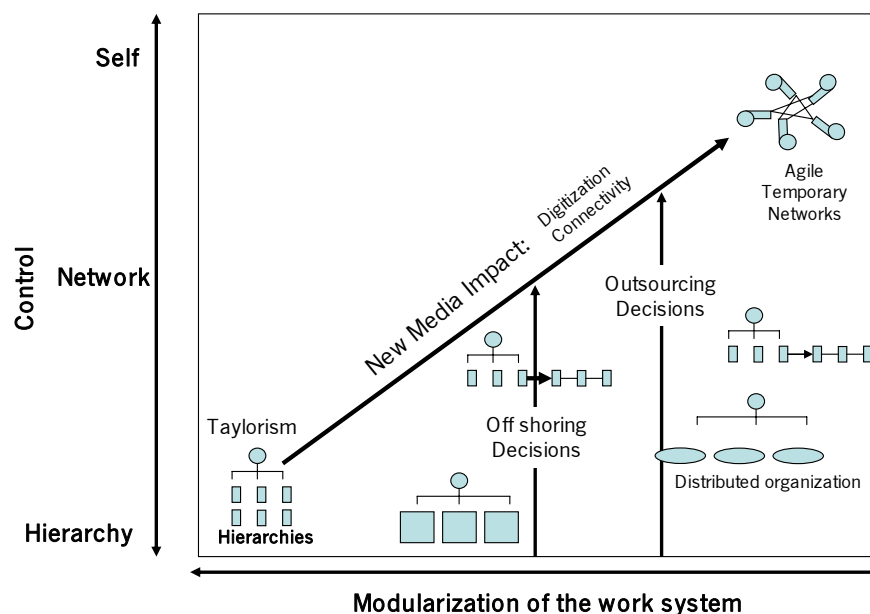


Figure 2: The emerging Work System. Adapted from Shina and Van de Ven, 2005

Network problems arise in complex work systems on the intersection of hierarchical and modularity problems. Networks display pluralistic structures, with members having divergent objectives and diffuse power and knowledge based-work processes (Shina and Van de Ven, 2005).

It is not difficult to understand that when organizations are increasingly involved in knowledge-intensive networks network problems in coordinating knowledge work will increase as well.

#### 1.14 The Brave New Workplace: Critical Views

Most books on the emerging and changing knowledge society tend to overlook the downsides of it. De Wilde (2001) criticizes the utopian views on the knowledge society as they embrace an instrumental perspective on knowledge. De Wilde argues that there is no revolutionary



shift taking place from an industrial to a knowledge society. On the contrary, knowledge work is increasingly industrialized and taylorized by applying new technologies and management tools to knowledge.

In their book “The Social Life of Information” Brown and Duguid (2000) warned of a tunnel design of the information age. In this tunnel design there is a sole focus on information, whereas context, background, history, common knowledge, and social resources are pushed aside. Tunnel design produces technologies that create as many as problems as they solve because they neglect resources that lie outside the focus of information.

In his book “The Brave New World of Work” (2000) Beck even takes a broader view on the changing nature of work. Central to his argument is that the transition from the industrial to a modern work society is accompanied with the emergence of a ‘free market utopia’. New work practices create labour market flexibility which allows key institutions to shift motivational and legitimation challenges away from the state and economic institutions onto individuals (Gephart, 2002). The transition from the old to the new work society is primarily a transition from old certainties, standardized work, and old-style welfare state economics and industrial politics towards a risk regime of which the individualization of work is the core characteristic. In the ideology of individualism, people place their personal interest first and view themselves as the centre of their planning and conduct (Beck, 1992). New work dimensions, like flexibility, globally distributed work, off shoring and outsourcing work and new workplace technologies are introducing risk into the workplace which is changing the workplace dramatically. Beck develops an alternative to this risk regime, which is called the *Weltbürgergesellschaft* in which self-subordination and integration (civil labor) into the present systems is the aim.

What becomes clear from the work of De Wilde, Brown & Duguid, and Beck is that the concepts of knowledge society and knowledge organization are impregnated with ideologies which tend to isolate the knowledge dimensions of organizations and work from their context in which they are embedded. Beck’s analysis clearly demonstrates the multidimensionality of the concept of work. “Work” as he argues, “has become so omnipotent that there is really no other concept opposed to it....For a society without work, so it seems, is a society without a centre, a society, in everyday life as in politics, economics, the law, and so on” Beck, 2000: 10).

### 1.15 Conclusions

In this chapter we gave a brief overview of the most important changes in the thinking of information and knowledge work. These changes went concomitant to major demographical, technological, social and economic shift in society at large. Perhaps the most important conclusion is that information and knowledge work is no longer confined to a small elite of highly educated and specialized experts but has become a major share in most work activities. The advances in information and communication technologies force us to rethink the physical workplace. If many work activities can be done from different locations and at

different times the question is what the function of physical workplaces will be in the near future.

At the same time we must acknowledge that our knowledge about alternative ways for organizing knowledge and information work is still immature. Research on workplace innovations in relation to productivity, flexibility, employee satisfaction, and innovativeness is still in an infancy phase. There is a clear need for comprehensive views on information and knowledge work, endorsed by empirical research. We hope that our research contributes to this comprehensive view.

## Chapter 2. Worlds of Work: a Framework

### 2.1 Introduction

In his provocative book on the future of work Malone (2003) argues that decentralization is a major force that drives organizations into decentralized organizational forms. In Malone's vision decentralization is equated with freedom and refers to the participation of people in making the decisions that matter to them. Democracies and markets will become in the end the dominant forms for organizing work. The declining costs of communication, allowed by new information and communication technologies is the driving force underlying the global trend of decentralization. Malone may be right in the long, long run; however his vision is oversimplifying and underestimating the complexity of the concept of work. To understand these complexities we developed a multi-dimensional framework of work which enables us to improve our understanding of nature and dynamics of knowledge, mobile work. Our framework is called the *Worlds of Work framework* (WoWf). The WoWf relies heavily on existing research on work design but adds and appropriates it to the knowledge and mobile aspects of work. The underlying assumption of our WoWf is that there is not just *one* future of work or a *new* world of work but that there are different worlds of work which may render different performances at the individual and corporate level. In this chapter we discuss the multidimensional Worlds of Work Framework.

#### Individual Work

Work has been studied for a long time, starting with the time and motion studies of pioneering scientific managers like Taylor (1911) and Gilbreth (1911). Numerous studies have been conducted hereafter to examine work design issues (Garg and Rastogi, 2005; Morgeson and Humphrey, 2006). The interest in work design grew enormously during the 1970's when many organizations experienced problems with organizational productivity and employee alienation (Hackman and Oldham, 1975). Many employees were unchallenged by the jobs they were working in. For that reason many organization initiated work redesign strategies to address these problems. However, most of the complexities in these work redesign strategies were not well understood at that time. The theory of work redesign and the related Job Diagnostic Survey (JDS), developed by Hackman and Oldham (1975, 1980) provided a sound theoretical foundation and measurement instrument to investigate the complexities of work. Their research became the centre piece in almost all later studies on work design. As most research on work relies heavily on the work of Hackman and Oldham (1975) we briefly summarize their core ideas.

As we may learn from the previous section, boundaries in the work system are subject to negotiations between the individual and the organization. Boundary conflicts not only refer to the size and the nature of the tasks but also to the expected performance related to the task. The theory of Hackman and Oldham argues that positive personal and work outcomes (high internal motivation, high work satisfaction, high quality performance and low absenteeism and turnover are obtained when the 'critical psychological states' are present for a given employee 1) experienced meaningfulness of work, 2) experienced responsibility for the

outcomes of work, 3) knowledge of the results of work activities. According to the authors, all these psychological states must be present for the positive outcomes to be realized. The theory proposes further that the three psychological states are created by the presence of five 'core' job dimensions. The first psychological state is enhanced by skill variety, task identity, and task significance. The second is enhanced by job autonomy, whereas the third psychological state is enhanced by high feedback on the work that is done. These three critical psychological states mediate between the five core dimensions of work and the personal and work outcomes.

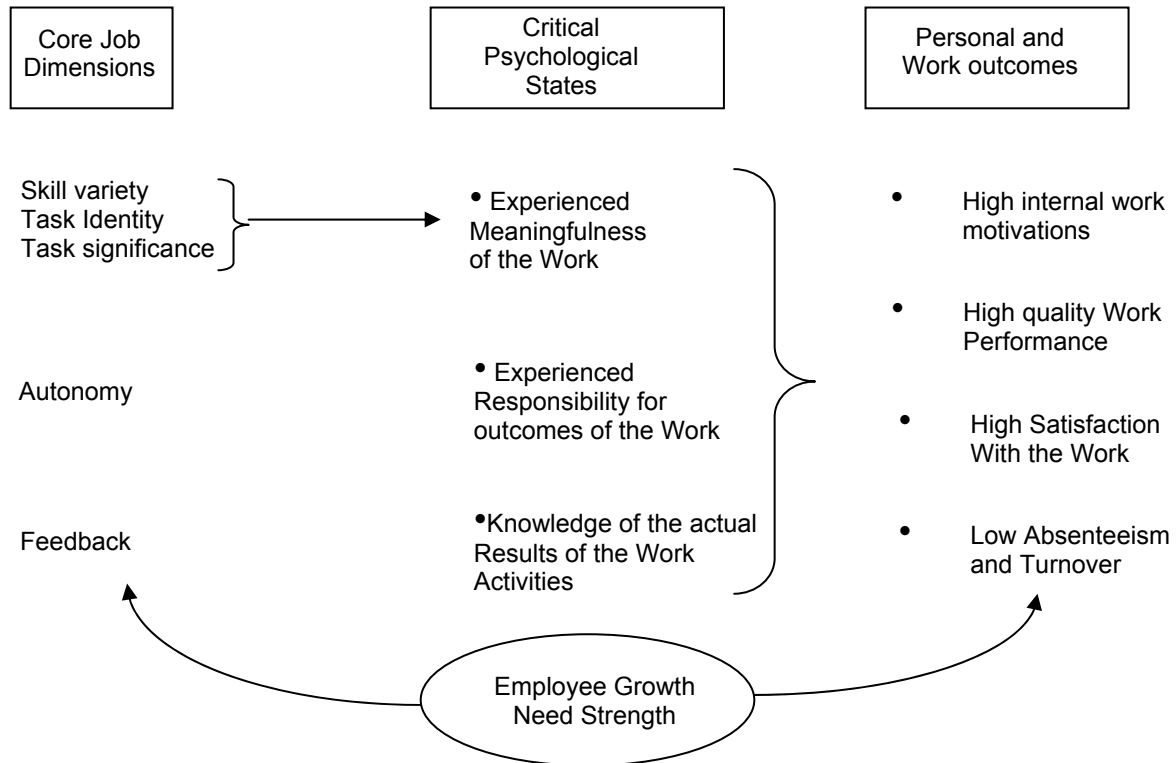


Figure 3: Theory of work redesign (Hackman and Oldham (1975, 1980))

The results of the Job Diagnostic Score can be summarized in the Motivating Potential Score (see below). The JDS has been adapted and complemented in many directions. However the theory and measurement instruments have also been criticized for different reasons. One reason is that many other job characteristics have been found to influence job motivation (Parker et al, 2001). Another criticism is that the psychometric properties of JDS, especially the low internal inconsistency of the JDS scales, appear to be problematic (Taber and Taylor, 1990; Morgeson and Humphrey, 2006). The third type of criticism relates to the neglect of the link between job characteristics and its broader environment (Morgeson and Humphrey, 2006). Later contingency and congruence models attempted to fill this gap in the research by emphasizing the external fit between the demands of an organization's task environment and the design of its internal structure (Shina and Van de Ven, 2005). A fourth type of criticism was voiced against psychologist focus on individual behaviour while ignoring the multilevel

nature of work design choices and collective nature of performance (Shina and Van de Ven, 2005).

Shina and Van de Ven (2005) conclude that the practice of work has been changing dramatically over the past 20 years, and are outpacing our theories and methods for representing and explaining them. In our review of the discussion on the knowledge society we emphasized the changing nature of knowledge work. Knowledge work is no longer reserved to elite of professional experts, but dispersed down the hierarchical levels of organizations. Moreover, much knowledge work has become related to new workplace (mobile) technologies work which is hardly reflected yet into work design models and instruments. Finally, knowledge work is not just an individual activity. Much knowledge work takes place in (virtual) teams.

## **2.2 Worlds of Work: Developing a Framework**

We started with an extensive literature review on old and new aspects of work. Our review of the literature revealed that there is a large amount of detailed and advanced research on different aspects of old and new work. However, we also found that this research has not addressed these aspects in a comprehensive way. We therefore selected a large number of work dimensions that are listed in the relevant literature and deem to be relevant for knowledge work (including team work, transparency, empowerment, modularity, work-life balance, technology, willingness to change and mobile technology aspects). We call them *new work-dimensions*.

We are not only interested in the new work dimensions but also in the extent to which they contribute to employee performance. Employee performance is viewed as a result of work activities. We selected four performance dimensions: employee satisfaction, productivity, flexibility, and innovativeness. In our research the work dimensions are framed as independent variables, whereas the performance dimensions are framed as dependent variables.

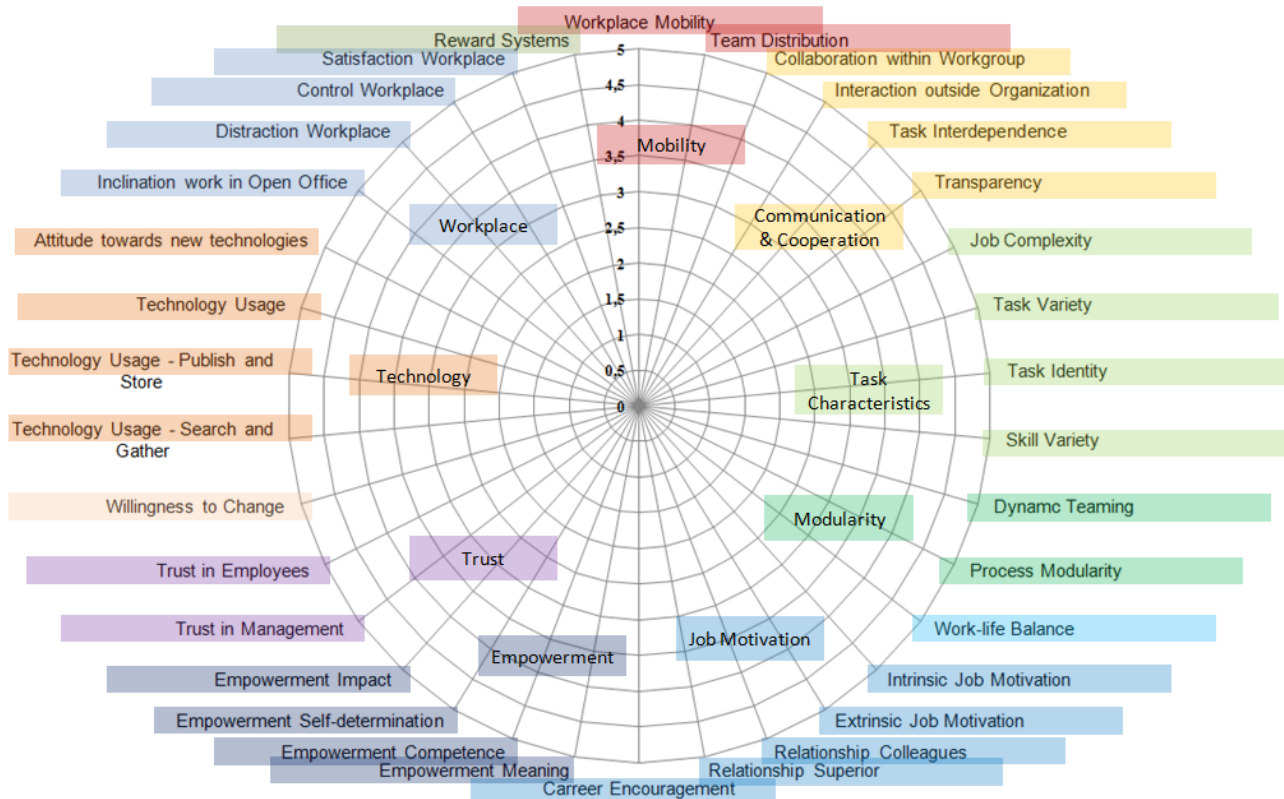
### **Dimensions of Work**

Work Design Theory is a good starting point that integrates several research streams from the literature. Recently Morgeson and Humphrey (2006) developed the 'Work Design Questionnaire' (WDQ). After a process of combining and dismissing a total of 107 work characteristics, found in previous research, they reduced the WDQ to 21 work design characteristics. Altogether the WDQ is a good instrument to be used for basic research on assessing the nature of work (Morgeson & Humphrey, 2006). However, of the seven major sources used in the research, the newest was published nine years ago and four of these were published over 20 years ago. This is in line with the notion of Morgeson and Humphrey (2006, p 1322) themselves that "there has been little new theoretical work on work design over the past 20 years". For our research we took the WDQ as a starting point and adapted it with a few new scales. The new scales primarily relate to new work-concepts like mobility, teamwork, modularity, and work-life balance. We identified 12 clusters of characteristics of work design that are apt to recent changes in the nature of work. This categorization of the

work dimensions in 12 clusters (+ member flexibility) needs further improvement in follow-up research.

**Measurement Instrument**

Based on the twelve characteristics of work, an extensive review of the literature was conducted in search of existing measurement instruments that could measure these dimensions. Table 1, Table 2 and Figure 4 provide an overview of the constructs, variables, and used sources.



**Figure 4: New World of Work Measurement instrument**

The aim was to use existing items (and associated scales) wherever possible. Eventually, 145 existing items were used in the first version of the measurement instrument. The measurement instrument was an online survey, in which all items were randomized. The majority of these items used a 5-point Likert scale from strongly disagree to strongly agree. The instrument was revised based on the results and comments of a pre-test among 30 people, discussions with the stakeholders, with a survey expert, and with experts in this area. After having analyzed the internal consistency of the constructs, twenty-six items were dropped. For the remainder, the randomization was adjusted to randomization per work characteristic (instead of randomization over all items), since it could shorten the duration to complete the survey and increase the internal consistency. In the discussions followed by the pre-test it appeared that the instrument missed several important items, therefore 22 items were added. Consequently, the second version of measurement instrument consisted of 141 items that measure the twelve work dimensions. The measurement instrument was pre-tested again by a

sample of 350 people with at least a bachelor (HBO) or master's degree. The second pre-test had two functions. First, we used it to remove any typing errors or other obscurities. Second, we used it to check the internal consistency of the constructs. The internal consistency of each construct was verified and optimized by deleting items. Deleting items, where possible, was also done to shorten the survey length. The constructs were optimized to have at least a Cronbach's Alpha of 0.6, but preferably higher. The third and final version of the measurement instrument includes 12 characteristics of work, subdivided in 36 variables, and measured by 108 items.

## 2.3 Worlds of Work Dimensions of Work

### Mobile and Distributed Work

Apparently we are experiencing a transition from co-located work environments towards distributed, mobile work spaces that cross geographical and time zones. New work environments should, therefore, facilitate mobile and collaborative knowledge work of highly qualified people working from different locations and without time constraints. However research indicates that mobile and distributive work does not automatically lead to higher performance (Chudoba et al, 2005). In our research we want to find out if and to what extent mobility of work correlates with individual performance.

### Communication and Cooperation in Teams

The characteristics of teams impact the effectiveness of these teams. One of these characteristics is the cooperation of the teams, for which items about collaboration within the workgroup are added (Campion et al., 1993). The information values and information culture of organizations and teams have an important influence on sharing and the usage of information (Choo et al., 2006), which could affect performance. The theory of task-technology suggests that individuals who work in teams with high task interdependence should be motivated to use more (collaborative) technology, which could result in higher performance (Jarvenpaa and Staples, 2000). However, task interdependence could negatively affect the performance, when individuals have to wait on their colleagues for instance. Interaction outside the organization concerns the interaction employees have with individuals outside the organization with for instance suppliers or customers (Morgeson & Humprey, 2006).

### Job and Task Characteristics

Task and job characteristics are the most commonly investigated work design characteristics (task variety, task identity, job complexity, skill variety). The extent to which a job entails completing a whole piece of work could make a job more interesting to perform (task identity). Task variety reflects the extent to which a job requires employees to carry out a wide range of tasks. Job complexity represents the extent to which the tasks of the job "require the use of high-level skills and are more mentally demanding and challenging" and skill variety refers to the use of multiple skills, all three are likely to have positive motivational outcomes" (Morgeson & Humprey, 2006, pp. 1323-1324).

### **Modularity**

To cope with the increasing demand for customized products and services, companies are advised to create “modular components that can be configured into a wide variety of end products and services, to minimize costs while maximizing individual customization” (Tu et al., 2004). Modularity is not the sole province of manufacturing companies. Knowledge-intensive firms, like software development companies, have a long tradition in modular-based production processes. Global operating software development teams rely to a large extent on modularized work activities.

Tu et al (2004) discuss three forms of modularity: product modularity, process modularity and dynamic teaming. Product modularity concerns the standardized (physical) modules of products, which is not applicable to research on knowledge work. Process modularity reflects standardizing process modules so they can easily be re-sequenced in response to customer changes. Dynamic teaming entails the use of modular structures to reorganize teams quickly in response to changes (Tu et al., 2004).

### **Work-Life Balance**

New Work concepts emphasize flexibility and mobility of work. An important question is how these new demands affect the border between work and family life. A border can be defined as the line of demarcation between the segments of individuals’ lives (Clark, 2000). Permeability and flexibility may have positive and negative spill-over effects. For example, lengthening of the average workweek, due to extensive downsizing, combined with responsibility for the care of children or elderly created a situation for especially dual-career parents where “juggling the demands of the workplace and the home has become a more difficult balancing act” (Hill et al., 2001, pp. 49-50). When employees experience a negative work-life balance it could result in, amongst others, decreased job satisfaction, greater likelihood of leaving the company and increased absenteeism (Hill et al., 2001)..

### **Job Motivation**

People are motivated for their work in a variety of ways. “Some people seem to be driven by a passionate interest in their work, a deep level of enjoyment and involvement in what they do. Whereas others are primarily motivated to work in response to something apart from the work itself, such as reward or recognition” (Amabile et al, 1994, pp. 950-951). Intrinsic and extrinsic motivation have primarily been studied as consequences of social situations. In our research we follow Amabile et al (1994) by studying both motivations as individual traits, that is, relatively stable individual differences. The question is to what extent intrinsic and extrinsic motivations influence performances like productivity, satisfaction and innovativeness. A related question is to what extent intrinsic and extrinsic motivation can concur. Can both motivations correlate (positively or negatively) with the same performances? For example intrinsic and extrinsic motivation both influence innovativeness or productivity? Most researchers argue that both motivations represent distinct constructs and that both work in opposite directions. However few theorists (Deci and Ryan, 1985; Abile et al, 1994) suggest that, under circumstances, intrinsic and extrinsic motivations show additive effects.



### *Vertical and Horizontal Relationships*

Research suggests that the relationships with supervisor and co-worker are critical for well-being (Morgeson & Humprey 2006). The relationships have a direct impact on individual autonomy (Mierlo et al., 2006) and the relationship with colleagues has a significant influence on job satisfaction (Linzer et al, 2000). Career encouragement could be a motivator as well, since it positively affects the encouragement to undertake trainings and managerial advancement, resulting in a higher managerial level with usually a higher salary (Tharenou et al, 1994).

### **Empowerment**

Since the mid 1980s empowerment has become a widely used topic in human resource management discussions and in research on work organizations. To empower means to give power to (Thomas and Velthouse, 1990). The interest for employee empowerment in the workplace is increasing, since global competition requires employees who embrace risk, take initiative, can cope with high uncertainty and stimulate innovation. In the literature, many different definitions have been used. Following Thomas and Velthouse (1990) we conceptualize empowerment primarily in terms of changes in cognitive variables which determine motivation in workers (intrinsic task motivation). Intrinsic task motivation involves positively valued experiences that individuals derive from a task. Empowerment is a multidimensional concept which consists of meaning, competence, self-determination, and impact (Spreitzer, 1995) Meaning is the value of a work goal, judged in relation to an individual's own ideal or standards. A low degree of meaningfulness might result in apathy, feeling detached and unrelated to significant events. Competence, or self-efficacy, is an individual's belief or capability to perform activities with skill. A low degree of competence leads people to avoid situations that require the relevant skills. Self-determination, or choice, is an individual's sense of having choice in initiating and regulating actions. Self-determination is closely related to what Hackman and Oldham called autonomy. A higher degree of self-determination positively influences flexibility, creativity, initiation, resiliency, and self-regulation (Deci and Ryan, 1985). Impact is the degree to which an individual can influence strategic, administrative or operating outcomes at work. People feel that they can make a difference. Impact is analogous to what Hackman and Oldham have called 'knowledge of results'. The multidimensional measure of psychological empowerment shows that empowerment influences managerial effectiveness and indeed innovation (Spreitzer, 1995).

### **Trust**

Trust is increasingly viewed as a pivotal element in modern work, especially when IT is used to collaborate on distance. Trust can be defined as the extent to which one is willing to ascribe good intentions to and have confidence in the words and actions of other people (Cook and Wall, 1980). IT increasingly enables employees to collaborate virtually, however collaboration in virtual teams makes it more difficult to maintain trust (Chudoba et al., 2005). And trust is regarded as "a highly important ingredient in the long-term stability of the organization and the well-being of its members" (Cook & Wall, 1980). In this research we distinguish between trust in management and trust in employees. We used the scales of Cook and Wall (1980) to measure both types of trust.

### **Willingness to Change**

To cope with all the changes discussed earlier, “organizations are reorganizing, downsizing and implementing new technology to retain their competitive edge” (Wanberg & Banas, 2000, p. 132). For some employees changes are opportunities for growth and learning, others disapprove even of the slightest changes. As they experience uncertainty and possibly fear of failure when faced with new tasks. Change is a major concern for organizations. The acceptance of change results in higher job satisfaction and is negatively related to intention to quit (Wanberg & Banas, 2000).

### **Technology**

New information and communication technologies are integral to new work concepts. However technology is not a monolithic, one dimensional construct. Knowledge management, the capability to create and disseminate knowledge, is a hot topic for organizations. The willingness to share information is critical herein. The use of technology is measured by items regarding the usage of information systems to search and gather information and to publish and store information (Jarvenpaa & Staples, 2000). Furthermore, an item concerning the usage of IT was added.

### **Workplace**

Increasingly workplaces must support technological and organizational changes, organizational changes (Lee & Brand, 2005). Expectation is greater on giving support to the needs of employees to make a balance between privacy, collaboration and other work processes. However, open workplaces are often criticized for being too noisy and distractive and for lacking privacy. Lee and Brand (2005) examined the effects of distractions, flexible use of workspace and personal control over the work environment on perceived job performance. They found that more personal control over the physical workplace and easy access to meeting places resulted in higher perceived group cohesiveness and job satisfaction. Distraction had only little effect on self-rated performance. In this research we used the scales of the items inclination to work in an enclosed area, distraction, control, satisfaction with workplace.

### **Reward System**

Performance appraisal on results will increasingly become more important within organizations, whereby it is important that employees feel they are rewarded for what they do. Therefore, items measuring reward system were included in this research (Federal Human Capital Survey, 2006).

The 12 work dimensions, the constructs used and the literature sources are described in Table 1.

Table 1: Work Characteristics Constructs, Variables, and Sources

Work Dimension	Constructs	Source
Mobile and distributed work	Workplace mobility	Chudoba et al., 2005
	Team distribution	
Communication & Cooperation	Communication within the work group	Campion et al., 1993
	Interaction outside organization	Morgeson & Humprey, 2006
	Task interdependence	Jarvenpaa and Staples, 2000
Task characteristics	Transparency	Choo et al., 2006
	Job complexity	Morgeson & Humprey, 2006
	Task variety	
	Task identity	
	Skill variety	
Member flexibility		
Modularity	Dynamic teaming	Tu et al., 2004
	Process modularity	
Work-life balance	Work-life balance	Hill et al., 2001
Job motivation	Intrinsic job motivation	Amabile et al., 1994
	Extrinsic job motivation	
	Relationships colleagues	Mierlo et al., 2006
	Relationship superior	
Career encouragement	Tharenou et al., 1994	
Empowerment	Empowerment meaning	Spreitzer, 1995
	Empowerment competence	
	Empowerment self-determination	
	Empowerment impact	
Trust	Trust in management	Cook & Wall, 1980
	Trust in employees	
Willingness to change	Willingness to change	Wanberg & Banas, 2000
Technology	Technology usage Search/Gather	Jarvenpaa & Staples, 2000
	Technology usage Publish/Store	
	Technology user classification	Composed for this research
	Attitude towards new technologies	Composed for this research
Workplace	Inclination open office	Lee & Brand, 2005
	Distraction	
	Control workplace	
	Satisfaction workplace	
Reward system	Reward system	Federal Human Capital Survey, 2006

## 2.4 Worlds of Work Performance Dimensions

We are interested in the question of whether and how the World of Work dimensions influences employee performances. Most work design research has focused on job satisfaction. For our research we selected three additional performances: productivity, flexibility and innovativeness. We used validated scales from previous research to measure these performances. We will measure these performances by using self-reported data. To measure employee satisfaction we used the items developed by Jun et al (2006). Productivity is measured by using the Overall Productivity construct that is developed by Staples et al (1999). In this research we look at perceived job flexibility with respect to time and location.. It is means that we do not study the formal flex programs that are offered by the organization. We study two aspect of flexibility: time and location. Flex time refers to the ability to rearrange one's work hours within certain guidelines offered by the company. Flex place refers to the degrees of control employees have over determining the location where their work is done (Hill et al, 2001). Finally, we will look at innovativeness. Innovativeness refers to the attitude towards innovation (e.g. adoption of innovation or ease of implementation). We used and adapted the items for measuring innovativeness that are developed by Ettlle and O'Keefe (1982).

**Table 2: Performances, Constructs, Variables, and Sources**

	<b>Constructs</b>	<b>Source</b>
Performance Dimensions	Employee satisfaction	Jun et al, 2006
	Productivity	Staples et al, 1999
	Job flexibility	Hill et al, 2001
	Innovation	Ertlie & O'Keefe, 1982

## 2.5 Data Collection

An online survey appeared to be best suited for this study. Online survey has several major advantages over mail, personal or telephone surveys relevant for this study. The flexibility of an online survey made it possible to easily offer the survey in two languages. The speed and timeliness of an online survey provided the opportunity to get the survey into the field and collect the data quickly. It provides convenience for the respondents, since they can complete the survey whenever he or she feels like it, unlike telephone surveys. The ease of data entry and (especially) analysis was a major advantage as well. The survey-tool used exported the answers directly to a format ready for statistical analysis, which is especially convenient when using a large quantity of items and a great number of respondents. The ease (and low cost) of follow-up is another major benefit for choosing an online survey (Evans & Mathur, 2005). The choice for an online survey for this study was therefore easily made. Instructions for answering the questions were inserted in the survey where necessary and all questions in the survey were mandatory to ensure a complete data set (no missing values).

Employees of the three case organizations requested to participate in this survey by an e-mail from their manager. The e-mail presented the purpose of the survey and emphasized the importance of the study. That is, the results of the survey will be used as a guideline to create an optimum work design for the employees, and the results will be used for the organization.

Furthermore, respondents were assured that their response will be treated confidentially and the e-mail contained a direct link to the webpage of the questionnaire.

## Chapter 3. Worlds of Work: Analysis and Results

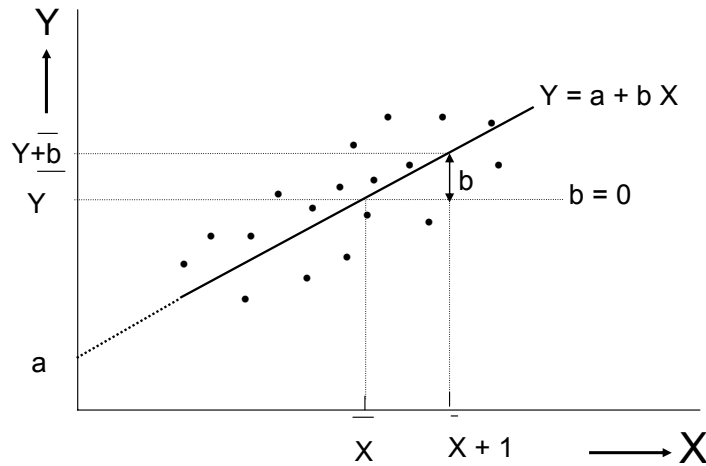
### 3.1 Introduction

In this chapter, we present the first results of the Worlds of Work framework (in short WoWf) for the three case companies, Microsoft Netherlands, De Unie, and Rabobank. As we will see, the organizations show interesting similarities and differences in the ways work is organized and valued by employees. The organizations also demonstrate similarities and differences in the ways and the extent to which work relates to factors that influence employee satisfaction, productivity, flexibility, and innovativeness. The differences outnumber the similarities between the companies. This is not a surprising result, as the three organizations differ in many respects. It is clear that firm- and industry-specific contexts significantly influence these four performance indicators. Our study yielded substantial differences in outcomes between the three cases, which suggest that a “one size fits all”, or universal approach, is inappropriate. Therefore, we think it both justified and relevant to refer to a “Worlds of Work” framework, instead of the ‘new workplace’ or ‘new world of work’. In this chapter we start by presenting an overview of the Worlds of Work, including the methodology applied which shed light on the study results, particularly the differences and similarities that emerged between the three organizations. In the following sections we discuss the results per case organization.

#### **How to read this chapter**

In this chapter, we discuss the research results of all three organizations. One part of the analysis and discussion is based on results of the WoW-survey we conducted at the three organizations. To interpret these survey results in a proper way, we used different statistical tests and procedures that won't be discussed here at length. For this we refer to the methodology section in the previous chapter. These results will mainly be presented in tables and radar plots. In the radar plots, we present the mean scores of all the respondents of the three case organizations. To determine whether the differences between the mean scores are statistically significant, we ran the One-Way ANOVA test. The Tukey-test allowed us to discuss the rank ordering between the differences on the mean. The third important statistical technique we used is the multiple regression analysis. This technique helped us to find the correlation between the work dimensions and the performance dimensions. It is important to note that this technique only provides the statistical correlations. It does not explain why these correlations are found, further in-depth research should be conducted to answer many of the questions that arise when finding these correlations. In the tables we present the so-called standardized betas. These betas indicates the strength of the correlation, see Figure 5.

**When X and Y are correlated, information about X will help to predict Y:**  
 if X increases by 1 unit, Y increases by **b** units



**Figure 5: Explaining how correlations work (b=beta)**

Next to the WoW-survey, we also conducted qualitative case study research. The strength of the case study approach is that a ‘rich’, contextual picture of the organization can be presented. The case study approach complements our survey-based research and helps to explain why statistical correlations are found (or not found).

**3.2 Sample and timing of measurements**

Table 3 describes the research sample of the WoWf study we conducted within Microsoft Netherlands , De Unie and 2 IT departments of Rabobank in 2007.

**Table 3: Descriptive Statistics research sample NWoW 2007 measurement**

	Microsoft Netherlands	De Unie	Rabobank *
Population Size	600	220	350
Sample Size	268	128	191
Managers	41	12	32
Non Managers	227	116	159

\* 2 IT departments

Each organization is in a different phase of implementing new WoW concepts. Therefore, the measurements we did in 2007 should be analyzed in the context of the implementation process of each organization. Figure 6 provides an overview of how the measurements can be related to the adoption process of implementing new WoW innovations and concepts into the organization.

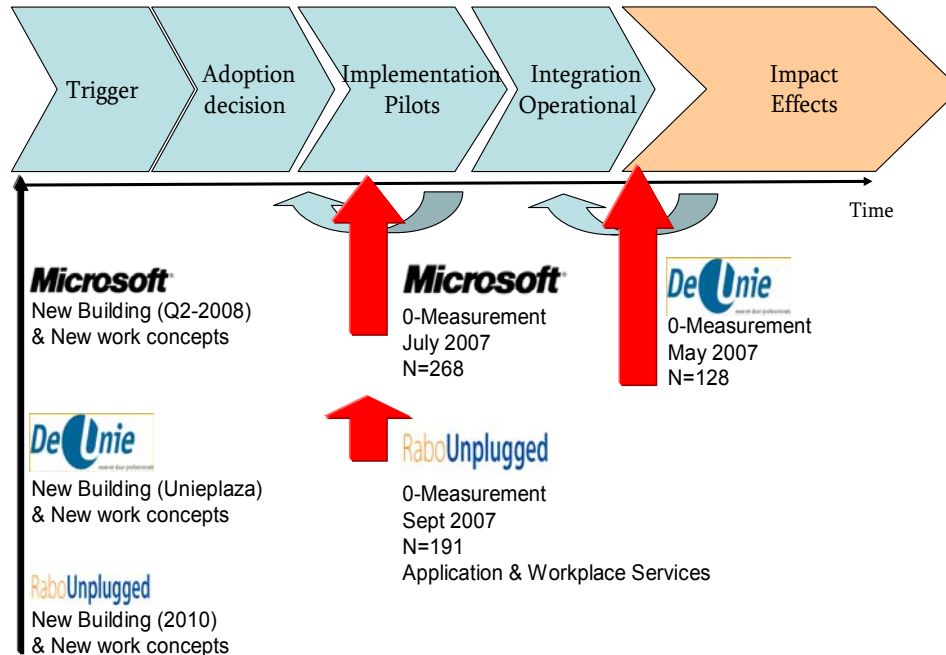


Figure 6: Timing of measurements in 2007

### 3.3 Work Dimensions across Case Organizations

The WoWf entails a long (34) list of work dimensions. An online questionnaire was used to collect information from the employees about these work dimensions.

Figure 7 presents a radar plot with the standardized mean scores of the three case organizations on all work dimensions. Looking at the radar plot it becomes clear that the patterns across the three case organizations are more or less the same. The employees give relative high scores on task variety, skill variety, relationships with superiors, and relationships with colleagues. They give relatively low scores on career encouragement, technology- and workplace factors. The low scores on career encouragement can be explained by the fact that we used a different kind of scale to measure career encouragement. For most work dimensions we used so-called ordinal scales, while for measuring career encouragement an interval scale is used. The interval scale involves asking respondents to indicate how frequent they were encouraged in their career development by people from within or outside the organization. This is quite different from ordinal scales which allows you to rank ordinal data, but for which the differences between the values cannot be quantified. For workplace mobility we also used an interval scale.

The most striking difference is the moderate-high score on workplace mobility for Microsoft and the low scores on this dimension for De Unie and Rabobank.



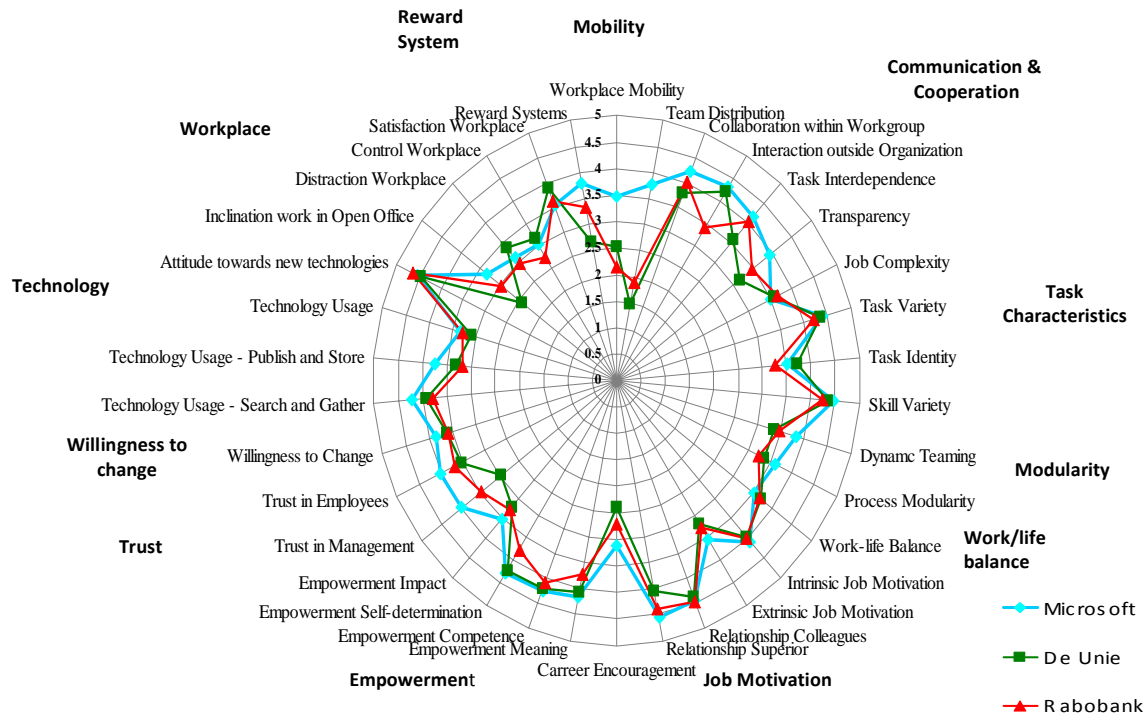


Figure 7: Dimensions of Work Independent variables Cross Case

To determine whether the differences between the three case organizations are significant, we ran the One-Way ANOVA-test. The results from this test are presented in Table 4. It shows that almost all differences are statistically significant. Job complexity, intrinsic job motivation, relationships with colleagues and attitude towards new technologies appear to be the only variables that are not significant. Overall, the minimum and maximum values for the standardized means do not vary largely. There are hardly any extreme values. The most striking differences concern workplace mobility and team distribution. Here, Microsoft significantly deviates from both De Unie and Rabobank.

The results from the Tukey-test, also depicted in Table 4, show the ranking orders in the differences for each dimension. For almost each dimension Microsoft has the highest mean score, followed by either De Unie or Rabobank. With respect to the workplace dimensions, De Unie employees gave higher scores for distraction and workplace satisfaction. This can probably be explained by the fact that De Unie started to introduce new work-concepts already in 2003, while Microsoft and Rabobank started only recently with introducing the new concepts. It is important to note (again) that the results on the differences should be treated with some caution as we are comparing very different companies here, operating in very different industries. Further research to investigate similarities and differences between companies within the same industry is believed to provide interesting and more comparable results.

Table 4: ANOVA results for Work of Work Dimensions

Categories	Mean values			F-value	Group comparison Turkey test
	Microsoft	De Unie	Rabobank		
<i>Mobility</i>					
Workplace mobility	3,46	2,52	2,14	177**	Ms > Un > Rb
Team distribution	3,76	1,45	1,90	484**	Ms > Rb > Un
<i>Communication &amp; Cooperation</i>					
Collaboration within organization	4,21	3,79	4,01	23.4**	Ms > Rb > Un
Interaction outside organization	4,29	4,20	3,41	66.8**	Ms & Un > Rb
<i>Task Characteristics</i>					
Task interdependence	4,17	3,59	4,03	28.9**	Ms & Rb > Un
Transparency	3,92	3,15	3,47	70.3**	Ms > Rb > Un
Job complexity	3,51	3,59	3,64	1,3	Ns
Task variety	4,38	4,32	4,18	9.5**	Ms & Un > Rb
Task identity	3,50	3,72	3,27	14.5**	Un > Ms > Rb
Skill variety	4,45	4,34	4,23	8.2**	Ms & Un > Un & Rb
<i>Modularity</i>					
Dynamic teaming	3,84	3,37	3,46	30.9**	Ms > Un & Rb
Process modularity	3,60	3,36	3,25	13.5**	Ms > Un & Rb
<i>Work/life balance</i>					
Work/life balance	3,51	3,69	3,66	3.7*	Ms = Un = Rb
<i>Job Motivation</i>					
Intrinsic job motivation	4,08	3,96	3,98	1,9	Ns
Extrinsic job motivation	3,54	3,17	3,26	20.0**	Ms > Un & Rb
Relationship colleague	4,44	4,36	4,47	1,2	Ns
Relationship superior	4,55	4,03	4,38	19.4**	Ms & Rb > Un
Career encouragement	3,11	2,39	2,71	23.0**	Ms > Rb > Un
<i>Empowerment</i>					
Empowerment meaning	4,14	4,06	3,72	28.5**	Ms & Un > Rb
Empowerment competence	4,23	4,19	4,07	6.8**	Ms & Un > Rb
Empowerment self-determination	4,27	4,21	3,77	47.7**	Ms & Un > Rb
Empowerment impact	3,51	3,02	3,27	10**	Ms > Un & Rb
<i>Trust</i>					
Trust in manager	3,96	2,95	3,46	131**	Ms > Rb > Un
Trust in employees	4,00	3,54	3,69	46.6**	Ms > Rb > Un

Categories	Mean values			F-value	Group comparison Turkey test
	Microsoft	De Unie	Rabobank		
<i>Willingness to Change</i>					
Willingness to change	3,84	3,61	3,59	18.0**	Ms > Un & Rb
<i>Technology</i>					
Technology usage search gather	4,22	3,93	3,79	38.0**	Ms > Un > Rb
Technology usage publish store	3,73	3,32	3,17	43.1**	Ms > Un & Rb
Technology user classification	3,34	3,07	3,28	9.0**	Ms & Rb > Un
Attitude towards new technologies	4,53	4,46	4,64	1,6	Ns
<i>Workplace</i>					
Inclination open office	3,33	2,43	2,96	33.5**	Ms > Rb > Un
Distraction	3,10	3,38	2,97	11.4**	Un > Ms & Rb
Control of workplace	3,03	3,15	2,74	17.3**	Ms & Un > Rb
Satisfaction Workplace	3,54	3,87	3,62	9.1**	Un > Ms & Rb
<i>Reward System</i>					
Reward system	3,79	2,66	3,34	108**	Ms > Rb > Un
<i>Satisfaction</i>					
Employee satisfaction	4,33	3,64	3,85	77.0**	Ms > Rb > Un
Productivity	3,97	3,84	3,82	5.6**	Ms > Un & Rb
<i>Flexibility</i>					
Member flexibility	3,51	3,69	3,51	3.9*	Un > Ms & Rb
Job flexibility	4,06	3,44	3,13	119**	Ms > Un > Rb
Change innovation	3,72	3,48	3,55	11.1**	Ms > Un & Rb

Notes: \*p , 0.05, \*\*p , 0.01; Tukey comparisons that are significant at ,0.05 level are reported;  
Ms = Microsoft, Un = De Unie and Rb = Rabobank ; Ns = Not Significant

### 3.4 WoWf Dimensions and Performance

We are especially interested in the question whether and to what extent the 34 work dimensions explain the variation in performances dimensions: employee satisfaction, productivity, flexibility, and innovativeness. It is important to note that we used subjective indicators for investigating the performance dimension.

The radar plot in Figure 8 shows that the standardized mean scores for the three companies on the performance dimensions are moderate-high. The radar plot also shows that on all performance dimensions the Microsoft employees gave the highest scores. The largest differences exist for job flexibility (MS 4,06; De Unie 3,44, Rabobank 3,13).

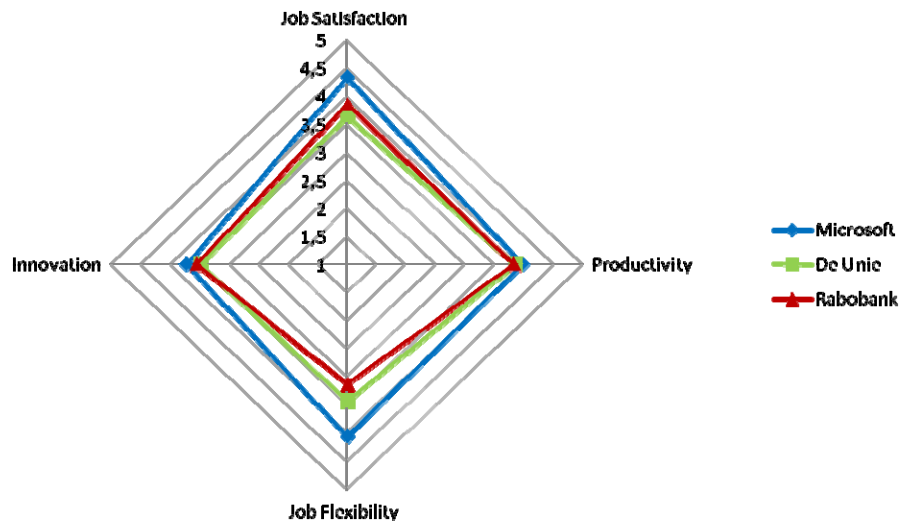


Figure 8: Dimensions of Work Dependent variables Cross Case

In order to investigate the extent to which a particular work dimension explains the variation in work performances, we ran multiple regression analyses. Figure 5 illustrates the power of the multiple regression analyses.

The overall results are presented in the tables 5, 6, 7 and 8. The numbers in the columns represent the significant correlations (standardized betas) that resulted from the multiple regression analyses we did for all work dimensions on the work performance indicators. In the column *Overall* the results are presented for the total number of respondents. In the other three columns the results are presented for each case organization. Comparing the overall scores with the company scores is interesting, as it could indicate which and to what extent common and firm-specific factors are at play, that influence the work of employees. The negative scores in some of the cells of the table indicate that a performance is negatively influenced by a particular factor. For example, transparency influences productivity negatively at Microsoft. We also attempted to distinguish between managers and non-managers. However, for De Unie and Rabobank the number of managers that participated in the survey was too low to show significant results.

### Employee satisfaction

Employee satisfaction appears to be associated to a large extent with relational, empowerment and workplace aspects of work. The relational aspects refer to the relationships with colleagues and superiors (including trust). In the overall sample, employee satisfaction further correlates with team distribution and reward system, while this is not the case at the three case organizations.

Empowerment of meaning correlates rather strongly with satisfaction in the overall sample and in the three case organizations. It implies that the more the employees value the work goals related to their own ideals or standards, the higher the degree of satisfaction. Empowerment self-determination correlates with satisfaction in the overall sample and at Microsoft. It means that employees feel they have a choice in initiating and regulating actions. We found a few negative correlations. In the overall sample, there are some correlations with the lack of distraction in the workplace.

**Table 5: Work dimensions influencing employee satisfaction**

Dimension	Sub Dimension	Overall	Microsoft	De Unie	Rabobank
Mobility	Workplace mobility				
	Team distribution	0,10 (5)*			
Communication & Collaboration	Collaboration within workgroup				<b>-0,13 (1)</b>
	Interaction outside organization				
Task characteristics	Task Interdependence				
	Transparency				
	Job Complexity				
	Task variety				
	Task identity				0,17 (4)
Modularity	Skill variety				
	Dynamic teaming			<b>-0,16 (1)</b>	
	Process modularity				
Work-life balance	Work-life balance				
Job Motivation	Intrinsic motivation				
	Extrinsic motivation				<b>-0,11 (2)</b>
	Relationship colleagues	0,07 (6)		0,20 (4)	
	Relationship superior		0,16 (5)		
	Career encouragement	0,07 (6)		0,21 (3)	0,16 (6)
Empowerment	Empowerment meaning	0,23 (2)	0,19 (3)	0,29 (2)	0,34 (1)
	Empowerment competence				
	Empowerment self-determination	0,07 (6)	0,13 (6)		
	Empowerment impact				
Trust	Trust in management	0,31 (1)	0,22 (1)	0,37 (1)	
	Trust in employees				
Willingness to Change	willingness to change				0,13 (5)
Technology	Technology usage-search &				

Dimension	Sub Dimension	Overall	Microsoft	De Unie	Rabobank
	gather				
	Technology usage-publish & store				
	Technology usage				
	Attitude towards new technologies				
Workplace	Inclination open office				
	Distraction workplace	<b>-0,07 (1)</b>			
	Control workplace				
	Satisfaction workplace	0,14 (3)	0,20 (2)		0,24 (2)
Reward System	Reward systems	0,13 (4)	0,16 (4)		
Flexibility	Member flexibility				0,23 (3)

\*The bracketed numbers correspond with ranking the strength of the correlation.

### Productivity

For productivity, as indicated earlier, we asked employees to self-rate their productivity (so no objective productivity measurement). The research shows that there are many work related factors influencing productivity. It also suggests that intervention processes get more complex as the number of factors that influence work increases. The most striking finding is that empowerment impact correlates with productivity in the overall sample as well as in the three case organizations. Empowerment impact is the degree to which the employees feel they can influence strategic, administrative, and/or operating outcomes at work. In the three case companies productivity also correlates strongly with empowerment competence (i.e. the employee's belief or capability to perform activities with their skills).

Extrinsic motivation further appears to contribute to productivity in the overall sample and De Unie and the Rabobank. Collaboration within the workgroup, skill variety, and willingness to change correlate with productivity in the overall sample and in one of the case organizations. Other work factors that influence productivity are firm-specific.

Employees in the overall sample (3,86), Microsoft (4,17) and Rabobank (4,03) reported relatively high task interdependencies. The table shows that these task interdependencies correlate negatively with productivity. So the higher the task interdependency, the lower the productivity. Negative correlations are also found for transparency and distraction workplace in the overall sample. Other negative correlations that are found are firm-specific.

**Table 6: Work dimensions influencing productivity**

Dimension	Sub Dimension	Overall	Microsoft	De Unie	Rabobank
Mobility	Workplace mobility				
	Team distribution	0,104 (5)			
Communication & Collaboration	Collaboration within workgroup	0,091 (6)			0,14 (6)
	Interaction outside organization				0,15 (5)
Task Characteristics	Task Interdependence	<b>-0,142 (1)</b>	<b>-0,14 (1)</b>		<b>-0,22 (1)</b>
	Transparency	<b>-0,082 (3)</b>	<b>-0,13 (2)</b>		
	Job Complexity		0,10 (7)		
	Task variety				
	Task identity		0,10 (6)		
	Skill variety	0,08 (7)		0,23 (2)	
Modularity	Dynamic teaming			<b>-0,16 (1)</b>	<b>-0,16 (3)</b>
	Process modularity				
Work-life balance	Work-life balance			0,18 (5)	
Job Motivation	Intrinsic motivation				
	Extrinsic motivation	0,248 (1)	0,29 (2)		0,23 (2)
	Relationship colleagues				<b>-0,17 (2)</b>
	Relationship superior				
	Career encouragement				
Empowerment	Empowerment meaning				
	Empowerment competence		0,32 (1)	0,46 (1)	0,30 (1)
	Empowerment self-determination		0,12 (4)		
	Empowerment impact	0,169 (2)	0,14 (3)	0,20 (4)	0,17 (3)
Trust	Trust in management				
	Trust in employees				
Willingness to Change	Willingness to change	0,075 (8)			0,17 (4)
Technology	Technology usage-search & gather				
	Technology usage-publish & store				
	Technology usage				
	Attitude towards new technologies				
Workplace	Inclination open office		0,11 (5)		
	Distraction workplace	<b>-0,065 (2)</b>			
	Control workplace			0,22 (3)	
	Satisfaction workplace	0,141 (3)			
Reward System	Reward systems	0,13 (4)			
Flexibility	Member flexibility				

**Job flexibility**

With regards to job flexibility, Microsoft employees, compared to their colleagues at De Unie and Rabobank, feel most flexible. Comparatively they work more frequent at different sites, use mobile devices and work while travelling. As with productivity, many factors influence job flexibility. Empowerment self-determination most strongly correlates with flexibility in

the overall sample and within Microsoft, De Unie, and Rabobank. A strong correlation is also found for workplace mobility and flexibility.

**Table 7: Work dimensions influencing job flexibility**

Dimension	Sub Dimension	Overall	Microsoft	De Unie	Rabobank
Mobility	Workplace mobility	0,314 (2)	0,25 (2)	0,4 (1)	0,12 (4)
	Team distribution	0,152 (3)			
Communication & Collaboration	Collaboration within workgroup	<b>-0,067 (3)</b>	<b>-0,12 (3)</b>	<b>-0,19 (1)</b>	
	Interaction outside organization				
Task characteristics	Task Interdependence				
	Transparency				
	Job Complexity				
	Task variety				
	Task identity	0,086 (4)	0,13 (3)		
	Skill variety				
Modularity	Dynamic teaming		0,11 (5)		
	Process modularity		<b>-0,12 (3)</b>		
Work-life balance	Work-life balance	0,077 (6)	0,13 (4)	0,15 (4)	
Job Motivation	Intrinsic motivation				
	Extrinsic motivation	<b>-0,073 (2)</b>	<b>-0,19 (1)</b>		
	Relationship colleagues				
	Relationship superior	0,069 (8)		0,16 (3)	
	Career encouragement				
Empowerment	Empowerment meaning	0,069 (7)			
	Empowerment competence	<b>-0,171 (1)</b>	<b>-0,16 (2)</b>	<b>-0,18 (2)</b>	<b>-0,28 (1)</b>
	Empowerment self-determination	0,33 (1)	0,37 (1)	0,32 (2)	0,30 (1)
	Empowerment impact				
Trust	Trust in management	0,083 (5)			
	Trust in employees				
Willingness to Change	willingness to change				
Technology	Technology usage-search & gather				
	Technology usage-publish & store				
	Technology usage				
	Attitude towards new technologies				
Workplace	Inclination open office				<b>-0,24 (2)</b>
	Distraction workplace	0,065 (9)			0,21 (2)
	Control workplace		<b>-0,16 (2)</b>		0,17 (3)
	Satisfaction workplace				
Reward System	Reward systems				
Flexibility	Member flexibility			0,16 (3)	



### Innovativeness

There are a few interesting findings with respect to the innovativeness of employees. First of all, it correlates in all organizations with “technology usage”. The relationship with technology is also more or less revealed in its association with workplace mobility. Secondly, and not surprisingly, there exists a close relationship with “willingness to change”. Thirdly, it correlates with intrinsic and extrinsic motivation and with career encouragement. Apparently, employees can be motivated themselves to be innovative, but also by the organization. There is a striking absence of positive correlations with the relational aspects and work characteristics. Even worse, for the overall sample and Microsoft, collaboration within the workgroup even negatively influences the perceived innovativeness of employees.

**Table 8: Work dimensions influencing innovativeness**

Dimension	Sub Dimension	Overall	Microsoft	De Unie	Rabobank
Mobility	Workplace mobility	0,246 (1)		0,07 (6)	
	Team distribution		0,11 (7)		
Communication & Collaboration	Collaboration within workgroup	<b>-0,116 (1)</b>	<b>-0,17 (1)</b>		
	Interaction outside organization				
Task characteristics	Task Interdependence				
	Transparency				
	Job Complexity				
	Task variety				
	Task identity				
	Skill variety				
Modularity	Dynamic teaming				
	Process modularity				
Work-life balance	Work-life balance				
Job Motivation	Intrinsic motivation	0,213 (2)	0,24 (2)	0,19 (3)	
	Extrinsic motivation	0,084 (7)		0,26 (1)	
	Relationship colleagues				
	Relationship superior				
	Career encouragement	0,132 (6)	0,12 (6)		0,13 (4)
Empowerment	Empowerment meaning		0,15 (3)		
	Empowerment competence				
	Empowerment self-determination				
	Empowerment impact	0,172 (3)	0,12 (6)		0,29 (2)
Trust	Trust in management				
	Trust in employees				
Willingness to Change	willingness to change		0,13 (5)	0,24 (2)	0,43 (1)
Technology	Technology usage-search & gather				
	Technology usage-publish & store				
	Technology usage	0,169 (4)	0,25 (1)	0,14 (5)	0,14 (3)
	Attitude towards new				

Dimension	Sub Dimension	Overall	Microsoft	De Unie	Rabobank
	technologies				
Workplace	Inclination open office		0,11 (7)		
	Distraction workplace	<b>-0,098 (2)</b>	<b>-0,12 (2)</b>		
	Control workplace			0,17 (4)	
	Satisfaction workplace			<b>-0,19 (1)</b>	
Reward System	Reward systems				
Flexibility	Member flexibility		0,14 (4)		

### Preliminary Conclusions Cross-Case Analysis

In this section, we made some cautious attempts to compare the results from our WoW-survey results across the three case organizations. If we take the limitations of comparing different companies in different industries into account, a few salient, albeit general, observations can be made:

- Empowerment (in general) appears to be a very important aspect of work for any performance dimension;
- Collaboration within the organization has a negative influence on “job satisfaction”, “perceived flexibility”, and “innovativeness”. However, it can contribute positively to productivity.
- Task characteristics show a negative relationship with productivity.
- Satisfaction workplace shows a positive influence on “employee satisfaction” and “productivity”.
- Across cases, we observed substantial variety with respect to the number and kind of work dimensions that correlate with the performance dimensions. They also vary with respect to the strength of correlation.
- This variety in number, kind, and strength justifies our choice for developing a comprehensive multi-work dimensions framework and underpins, within such context our argument that it would be preferable to refer to multiple “Worlds of Work” as opposed to the “New World of Work”. Therefore, one size doesn’t fit all.

The approach presented in our research reflects the notion of Sinha & Van de Ven (2005) that the development of a theoretical solution for the work systems of organizations is a difficult, if not impossible, objective. Since “the work systems are often characterized by a variety of conflicting environmental demands, internal design configuration trade-offs, and diverse performance expectations” (Sinha & Van de Ven, 2005, p. 404).

### 3.5 Firm-specific findings

In the previous section we discussed the similarities and differences between the overall sample and the case organizations. The differences can be explained by firm-specific factors (history, industry, culture etc.). In this section we therefore first explore the contextual factors that are relevant, as these significantly influence the work environment in the case organizations. Subsequently, we present and discuss the standardized means scores on all work dimensions (radar plots). Finally, we discuss the significant correlations between work dimensions factors and the four performance indicators. We compare them with standardized means scores to conclude to what extent the work environment in the case organization can be improved by intervening in the different work dimensions.

### 3.6 The World of Work of Microsoft

#### Organizational Profile

Microsoft, founded in 1975, is a worldwide computer technology company. It is the worldwide leader in software, services and solutions. Well-known products of Microsoft are, among others, Microsoft Windows, Microsoft Office, Windows Mobile and the Xbox. Its mission is to help people and businesses throughout the whole world realize their full potential.

Microsoft The Netherlands is a medium sized subsidiary of Microsoft Corporation and is part of Microsoft EMEA, which stands for the Microsoft's European, Middle East, and African region. In comparison to the corporate headquarters, which is more focused on development, Microsoft The Netherlands has a more diversified workforce. In 2008 Microsoft the Netherlands will move into a new building at Schiphol. This building will be the showcase of Microsoft's vision on a "New World of Work" (NWOW).

#### History

In 1975, Bill Gates and Paul Allen founded Microsoft. The foundation was guided by the belief that the PC would be a very useful tool on every office desk and in every home. In 1981, IBM introduced its first computers with a Microsoft operating system (OS), called MS-DOS 1.0. Microsoft's breakthrough in terms of revenue and employees occurred 20 years after its start-up, as a result of the introduction of the OS Windows 95. Windows 95 brought the world of OSs to a whole new level due to its advanced graphics, intuitive interface and low costs. Microsoft's Office 95 also contributed to the success of Microsoft at that time.

At the end of 2006, Microsoft has launched the new releases of three of its key products: the OS Windows Vista, 2007 Office system and Exchange Server 2007.

In the Netherlands, these three products have been launched around the theme of 'Ready for the New World of Work' (in short NWOW). NWOW is a term Microsoft uses for its vision on the changing world of work and was coined for the first time by Bill Gates in 2005. According to the General Manager of Microsoft The Netherlands, Theo Rinsema, the new products will ease the new way of working. Technology is no longer the main point to focus

on; instead, it is the individual around which the technology is developed. He furthermore states that in business everything revolves around employees, technology comes second. This development is the directory for Microsoft for the development of its products (Computable Special, 13 December 2006).

In order to live up with its “Realizing Potential” mission, in 2006 Microsoft The Netherlands started to implement the ideas of its NWO vision under the codename “2bPR”, which stands for “to be people ready”. Below, under the header process, a detailed description of this project will be given.

### **Organizational structure**

Microsoft Corp. is run by a Board of Directors consisting of ten people. In the Netherlands, sales of Microsoft products and services occur mainly following an indirect model: partners and resellers take care of the implementation and sales of Microsoft products and technology. The Dutch subsidiary is split up into 12 departments, which are listed below, in order to meet customer expectations and demands to the fullest. These departments are run daily by the Management Team. Head of the team is the General Manager of Microsoft The Netherlands, Theo Rinsema.

- Business Marketing Organization
- Customer & Partner Experience
- Developer & Platform Enthusiasm
- Enterprise & Partner Group
- Finance & Administration
- Home & Entertainment Division
- Human Resource Management
- Microsoft Services
- Online Services Group
- Original Equipment Manufacturer
- Public Sector
- Small and Mid Market Solutions & Partners

### **Culture**

Within Microsoft, people are very helpful and behave proactively to reach targets and support each other. Microsoft assigns a public open office space to every employee. In general, all employees can work wherever and whenever they want, using flexible workspaces or through remote access. Employees use the latest Microsoft products inside the company in an effort to test them in “real-world” situations, which is internally known as “dog food”. In January 2007, the Harris Interactive/The Wall Street Journal Reputation Quotient survey came to the conclusion that Microsoft had the world’s best corporate reputation, citing strong financial performance, vision & leadership, and workplace environment rankings. The Dutch subsidiary seems to perform evenly on these measures.

Known for what is generally described as a developer-centric business culture, Microsoft has historically given customer support over Usenet newsgroups and the World Wide Web, and awards Microsoft MVP status to volunteers who are deemed helpful in assisting the company's customers. A great deal of time and money is spent each year on recruiting young

university-trained software developers and on keeping them in the company. The new office building of Microsoft The Netherlands will become the showcase of the context and culture in which Microsoft's employees are thriving in a 2bPR fashion in their New World of Work. In this view, the changes we are dealing with, for which the change in culture facilitates a change on the social side, can be defined as one of repositioning the firm's strategy to reframe the organization's collective mindset and revitalizing its culture according to Huy and Mintzberg (2003).

From a managerial perspective it is perceived relatively important to empower individual knowledge workers, by giving them the freedom to direct their work tasks and define their place and time to work (flexibility, no constraining factors to do your work) themselves. Thereby striving to encourage personal development, through a supportive management culture, which means workers are being empowered, and have full access to relevant information and tools build around their work activities.

#### **Internal and external triggers**

There are several reasons why Microsoft introduced the 2bPR project of which three are the most important. The main reason is the changing business model of Microsoft. Traditionally, people obtained software by buying an existing packaged solution from a software vendor like Microsoft. Nowadays, however, software as a service has grown substantially. Software as a service means that people do not own a software package, but only pay for the use (of a particular part) of an application. Due to advertisement earnings, organizations are even able to offer services for free. In order to sustain growth, Microsoft is trying to find new legs for growth. Introducing new ways of working is an illustration of that.

The second reason can be labelled as a 'practice what you preach' reason. By introducing new ways of working, employees at Microsoft start using the by Microsoft itself developed software more intensively. This way, the wide variety of possibilities these Microsoft software applications provide becomes apparently clear to, for instance, (potential) customers.

The last reason Microsoft started off with the 2bPR project, is the decreasing labour force because of the ageing population. As a result of this decreasing labour force, the labour market will be structurally tight. To attract and keep the best employees, employees should be provided with the possibility to fulfil their ambitions. New ways of work should provide them in that. New ways of work also can provide employees with a better work-life balance, since it is easier to do work, while not physically present at the office (mobile or at home). This can reduce work related traffic and avoiding traffic jams during rush hours. Furthermore, it facilitates a more flexible combination of personal activities (like bringing children to school) with work related activities (like joining a conference call with foreign colleagues in the evening). Furthermore, the only possibility to sustain growth with a decreasing work force is by increasing the productivity of employees. New ways of work at Microsoft should attract the highest qualified employees to work for the company. And realize the full potential of its employees and thereby increase their productivity.

## Process

From 2005 on Microsoft Corporation releases several white papers and information documents regarding the changing world of work (i.e. Digital Work style: The New World of Work, 2005a) and the centrality of people in the knowledge economy (f.e. The People-Ready Business, 2006a). Microsoft (2005a) writes “we should not forget that the ability to adapt and innovate is fundamentally a *human* talent. Empowering *people* to work more efficiently and effectively in the “digital work style” of the new world of work should be at the centre of any organization’s strategy as it addresses the coming era of rapid change and increasing global integration”. The ‘New World of Work’ (Now) vision from Bill gates encapsulates the effects of a changing world on the work environment. And since the release of both White Papers several interventions and strategies, most of them under the umbrella name of ‘2be People-Ready’ or 2bPR have been created to adopt new ways of working better aligned to the New World of Work.

In 2005 several divisions at Microsoft Corporation participated in the ‘Workplace Advantage’ program. By changing the working place these divisions became better aligned to Microsoft’s Now and People-Ready visions. Interventions within this program all aimed at creating the optimal work environment for knowledge workers. The changes were regarded a huge success. “Using workplace advantage can generate productivity improvements of between 5% and 35% depending on the individual elements you measure” (Chris Owen, 2006b) and “I believe the ‘Workplace Advantage’ program can potentially make quite a contribution to our success moving forward with Microsoft” (Ray Ozzie, 2006b).

At the successful Dutch Subsidiary of Microsoft, they became “Subsidiary of the Year” in 2007, the General Manager (GM) Theo Rinsema and his Management Team decide in 2006 to integrate 2bPR and Now into their business priorities and to help Microsoft Corporation further develop new ways of working, the Now vision and 2bPR strategies. Several reasons inspire Microsoft the Netherlands to focus attention and resources on initiating this innovative journey.

It all starts with a planned internal cultural change and relocation to a new building. In 2005 it is decided Microsoft the Netherlands will construct a new building and relocate in the near future. For this reason they get into close contact with Microsoft Corporate and learn more about the ‘Workplace Advantage’ program and the findings of the Activity-Based Working program. At that moment the new building is seen as an excellent opportunity to align the organization to the New World of Work vision, successfully implement a new work style and mindset and become a People-Ready business. The building is crucial as adapting the physical working place to the needs of knowledge workers is in the mean acknowledged to be one of the main pillars of becoming a People-Ready business.

In the same year a 2bPR Steering Committee is formed consisting of a subset of the Country Leadership Team (CLT) and project managers from other parts of the organization to lead three project groups representing the main pillars of the knowledge worker work context. The first group focuses on the new building and is called (1) “Physical – Our Place”, the second group focuses on the new digital work style and technology to support it and is called (2) “Virtual – Anywhere” and the third group focuses on the cultural and mental change

needed to support the changes and is called (3) “Mental – Our Journey”. Microsoft believes that to align the organization to the external world and to successfully support a new work style (Digital Work style) they have to optimize the World of Work and they can do this by changing elements in the physical work environment, the technological work environment and the social or mental environment. To underpin the importance of 2bPR, it is decided the GM chairs the Steering Committee (Microsoft, 2006c).

The Steering Group defines successful implementation of 2bPR and adaptation to the demands of the NWOW as (1) really internalizing our mission (Realizing Potential) and vision (New World of Work), (2) increase collaboration within our company and with our customers, partners and co-creators, (3) be the most admired employer in the Netherlands, (4) be a showcase for productivity, (5) be a showcase for work-life balance, (6) be a showcase of The New World of Work and (7) ensure sustainable future growth (>10% YOY) with limited cost-increase (<5% YOY) (Microsoft, 2006c).

Throughout 2006 and 2007, several meetings, brainstorming and dialogues are planned by the 3 project groups. The aim is to extract knowledge and thoughts from Microsoft employees and People Managers (middle management) to further clarify the NWOW vision and 2bPR and to find what actions will be effective to make Microsoft a People-Ready business able to compete successfully in the NWOW and what outcomes are expected. Furthermore, outputs of the Activity Based Working study (Microsoft, 2005b), where the activities of each individual knowledge worker were measured in time and frequency, are used for the development of digital work style trainings (“virtual”) and the construction of the building (“physical”).

On September 6, 2007 all that has been learned about 2bPR over the past couple of months is communicated to all employees of the Dutch Microsoft Sub during the “Space for Growth Day” at the “Van Nellie Fairies” in Rotterdam. This day was meant to accelerate the mental change process of Microsoft knowledge workers to become and think People-Ready. Defined targets of the day were (1) the start or continuation of an individual journey to become and think 2bPR and to become enabled for success in the New World of Work, (2) start of mass-dialogue with colleagues (day itself and afterwards through e.g. blogs, wikis), (3) start improvement own (working) process or style (according to activity-based insights) and (4) first dialogue, what does this mean for your team?

The expected outcomes of the day were answers to (1) why we as Microsoft should start 2bPR and why it is important for our business growth and our personal growth, (2) why people are asked people to activate themselves, (3) what is expected mentally, and (4) what is expected virtually. The format of communication during this day was to balance self-experience with teaching, pragmatic and hands-on. “Let Microsoft employees internalize information by using dialogue” (Microsoft, 2007a).

Slowly but gradually 2bPR is integrated into the business as a vision behind all what is done. It comes back during meetings, corporate- and special 2bPR events, in business documents, development of trainings, in the construction of the new building and even in the vocabulary

used at Microsoft. For example, if a computer does not function the way you expect it to function a common saying has become 'today my computer is not 2bPR'. And 'this coffee machine is not 2bPR' starts meaning 'the coffee machine does not work or the coffee it produces is really bad-quality'.

Follow-up after the "Space for Growth", starts targeting the mental patterns of Microsoft employees to improve personal effectiveness, by self-insight, team-insight and technological insight. This is supported by technological adaptations to make Microsoft's software better aligned to the needs of knowledge workers. The "Virtual – Anywhere" group initiates new developments on top of Microsoft's existent software to ease the work flow of knowledge workers in the NWOW. The newly developed tools are implemented on an on-going basis and aim to better support the flexible 'digital work style' and working in the newly constructed building that will be opened in 2008. The "Virtual – anywhere" and "Mental – Our journey" groups cooperate to find the technological needs and mindset changes necessary to work in the NWOW.

Based on the analysis of activities of knowledge workers (Microsoft, 2005b), individual work styles per persona (Microsoft, 2005c) and different possible working scenarios (Microsoft, 2007c) trainings are developed to support knowledge workers on how to effectively execute the different working scenarios, while using the newest technologies, but as well on what other knowledge and skills are needed and what kind of working agreements can possibly be made within the team. Several people are selected to become 'Floorwalker' or 'Buddy' to "teach by doing" beyond the classroom. Last but not least several people development (personal- and team development) programs are integrated under the 2bPR umbrella, as part of the "Mental – Our Journey" projects as this is seen as critical to implement 2bPR and optimize knowledge worker productivity. Self reflection is encouraged by providing several opportunities for training and Microsoft implements the MBTI personality test as input for dialogue to create understanding of one self, the fact that people are different and communicate differently, and to build a standard communication format to discuss these differences in an objective way.

All 2bPR strategies and interventions subscribe to the mission of Microsoft to let people fully realize their potential. Microsoft aims to do this by providing software and technological training, but as well by providing its employees room for personal growth and development.

*"People Ready" is the Microsoft philosophy of business success: An organization is best able to grow and succeed when it recognizes that people are its most important asset and empowers them with the right tools and technologies to drive the business forward* (Microsoft, 2007<sup>1</sup>).

As Theo Rinsema, General Manager of the Netherlands, remarks at the "Space for Growth" day September 6, 2007, "without personal growth of our employees there will be no sustainable growth of our business" (Theo Rinsema, 2007b).

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<sup>1</sup> Microsoft, 2007 June, People Ready Home Page



### Effects

As mentioned before, in 2005 Microsoft released several White Papers concerning a new vision, called Digital Work styles: the New World of Work and 2bPR (to be People Ready). To successfully develop a role model for change, the Netherlands became the pilot country for 2bPR and New World of Work ways of working. Lessons from this effort will be shared with other countries and clients in the future. Microsoft the Netherlands launched 6 Business Priorities for Business Growth and the 2bPR vision for Personal Growth in 2006. The official launch of the 2bPR strategy was the Annual Meeting of 2006. Until April 2008, several change initiatives are scheduled to align the business to this new strategy before they move to a new building as part of this strategy.

The 2bPR change process has involved change creators and implementers from all different layers within the organization (see Figure 9). Several interventions have been created, using input from the different stakeholders which has been gathered within several (in)formal (social) processes of interaction (meetings, brainstorm, lunch, wiki's, blogs). To align the organization to the external world and to successfully support a new work style (Digital Work style) Microsoft aimed at optimizing their World of Work by changing elements in the physical work environment, the virtual/ technological work environment and the social/ mental environment. Intermediate outcomes expected are improved collaboration, improved knowledge sharing and improved creation in a dispersed virtual organization with final outcomes of increased productivity, satisfaction, flexibility and innovation.

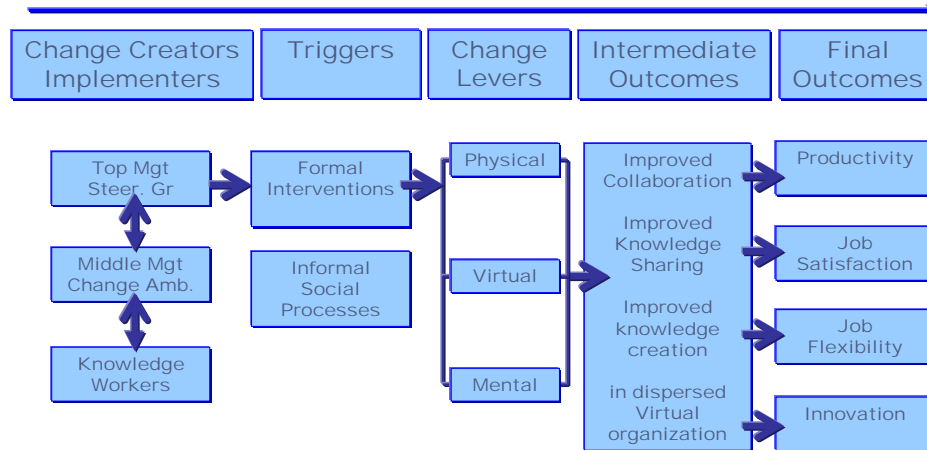


Figure 9: 2bPR change process Microsoft (Dupain, 2008)

To increase productivity and realize full potential of people and businesses in the New World of Work focus of investment and management's attention should be more and more directed towards people; their energy, concerns and development, which is envisioned in 2bPR. The 2bPR initiative is already said to enhance personal productivity at the development division of Microsoft Corporate, where measurements were taken quite easily by amount of correct code lines written. The 2bPR change process redirects old routines which are ineffective in

the New World of Work and creates new and more effective working standards enabling knowledge workers to realize their full potential (Microsoft's mission) by increasing their productivity, innovativeness, flexibility and satisfaction.

The transition, or 2bPR project, in the present case study, entails changes being physical, technological and psychological in nature, involving change in office design, rethinking the way of work, adopting new behaviours, and getting rid of old practices. Managers at Microsoft corroborate the need for change and allocate resources to shift the mental models or mindsets (Bullock and Batten, 1985; Wind and Crook, 2006; Davenport, 2005). In turn, we acknowledge the fact that the conventional behavioural pattern under subject in the current research study can be characterized as established by a mental model atypical for the digital, knowledge-based economy (White and Bessant, 2006).

As a result of the initiated changes the mindset of the employees are geared towards new ways of working, which are said to benefit individual productivity, satisfaction, flexibility, and innovativeness. Workers indicate that the empowerment they perceive does influence their job satisfaction. In addition 2bPR is mentioned within the organization as a valuable concept. And interventions under the 2bPR umbrella name are generally considered supportive for improving personal effectiveness, by for example better enabling the Microsoft employee to use the company's own technology and by inspiring self-insight and team-insight easing communication and knowledge sharing.

"We want to be an organization that provides room for growth. To each other, to partners and to the world around us" (Gonnie Been, 2007b).

### **Microsoft WoWf Results and Analysis**

#### **Dimensions of Work**

In July 2007, we sent the questionnaire to all (600) Microsoft employees. In total 268 (227 non-managers and 41 managers) filled out the questionnaire used for our analysis. The radar plot (Figure 10) gives an overall impression of the scores on a five-point scale on the dimensions of the WoWf. A few interesting observations can be made:

- Overall, Microsoft employees score *relatively* high on all dimensions (not lower than 3).
- Microsoft employees score high on(4-4,5) on task variety, skill variety, relationship colleagues, relationship superior, attitude towards new technologies;
- Microsoft employees score *relatively* low-average ( $\pm 3,5$ ) on the dimensions workplace mobility, task identity, process modularity, extrinsic job motivation.
- Microsoft employees score *relatively* low ( $\pm 3$ ) on the dimensions career encouragement, technology usage, inclination to work in open office, distraction workplace, and control workplace.

Microsoft employees experience a high variety of tasks that should be accomplished with a high variety of skills. The low scores on task identity indicate that Microsoft employees feel that their work is not organized in such a way that an entire work activity can be accomplished from the beginning to the end. This implies that many jobs are open-ended and

don't have well-specified tasks. The relatively low score on process modularity may correlate to the low score on task identity. Further research is needed to explore this relationship.

Microsoft employees are able to manage their work-life balance relatively well. However, the score is not very high. It would be interesting to explore this dimension further in relation with other dimensions.

The relatively low score on career encouragement indicates a relatively lack of attention for career issues within the company.

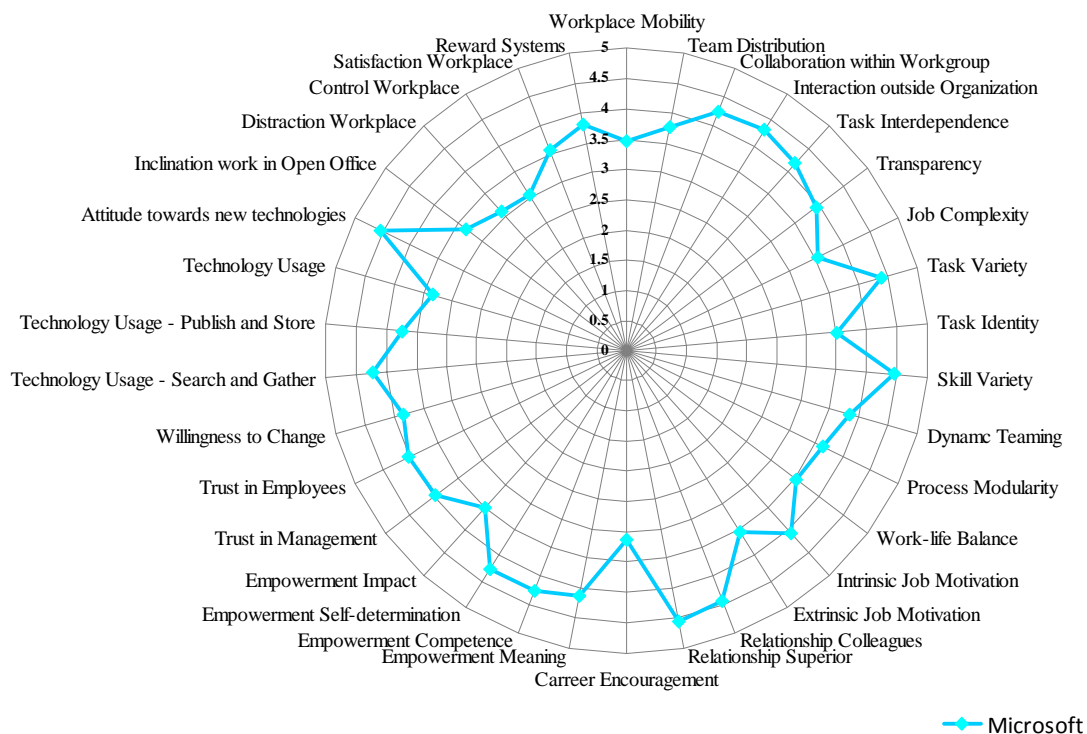


Figure 10: Dimensions of Work Independent variables Case Microsoft (T<sub>0</sub>=July 2007, N=268)

Microsoft employees give relatively low scores on workplace dimensions. They do not embrace whole heartily open work environments and feel that a certain level of privacy in the workplace contributes to their effectiveness. Moreover, they don't think they can control their own workplace to a large extent. In their research on knowledge worker performance Davenport et al (2002) found that open work environments have been championed by many managers but frequently meet scepticism from the part of knowledge workers. They tend to believe that the primary benefit of open office arrangements are low costs as more people are 'packaged' in less physical space ('cubicles'). To some extent, our results comply with the research of Davenport et al. (2002).

Microsoft employees give average scores on the reward system and the workplace mobility dimensions. With respect to the reward system the employees feel that rewards are moderately related to performances. The average score on workplace mobility can probably be explained by the fact that no distinction is made between the different categories of employees with respect to their mobility. We found, not surprisingly, that mobile workers in Microsoft score higher on the mobile workplace dimension.

### Work Characteristics and Individual Performances

We are interested if and to what extent work (place) characteristics correlate with individual performance with respect to productivity, job flexibility, innovativeness, and employee satisfaction. The radar plot shows very high scores on the four performance indicators (employee satisfaction: 4,33; productivity: 3,97; job flexibility: 4,06; innovativeness: 3,72). As we mentioned before, the scores on the performance dimensions are based on self-reported assessments.

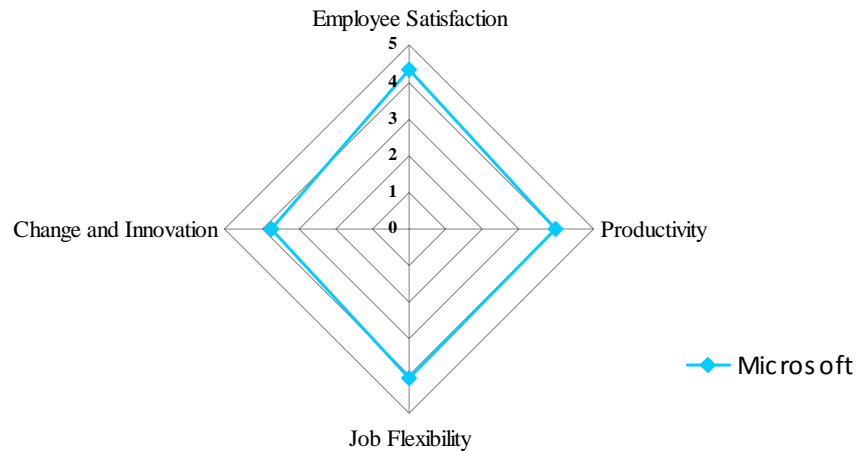


Figure 11: Dimensions of Work Dependent variables Microsoft (T<sub>0</sub>=July 2007, N=268)

### Dimensions of Work and Employee Satisfaction

It is interesting to see what factors contribute to satisfy Microsoft employees in their work. High trust in management and relationships with superiors appear to correlate with employee satisfaction. There is not much room for improvement here as the employees gave already high scores on this dimension. It is interesting to observe that high trust in management and good relationships with superiors coalesce with high scores on the empowerment dimensions. The results further show that there is evidence that workplace re-designs or adaptations to the workplace will positively influence employee satisfaction. Moreover Microsoft employees do not think that the reward systems are closely linked up to individual and team performances. Aligning the reward system to performance is expected to contribute positively to employee satisfaction.

Work Dimension	Beta	Sig.	Means	Enhancement opportunities
Trust in Management	0,22	0,00	4,14	0,86
Satisfaction Workplace	0,20	0,00	3,54	1,46
Empowerment Meaning	0,19	0,00	4,14	0,86
Reward Systems	0,16	0,01	3,79	1,21
Relationship Superior	0,16	0,02	4,55	0,45
Empowerment Self-determination	0,13	0,05	4,27	0,73

Table 9: Regression Table Work Dimensions influencing Employee Satisfaction Case Microsoft (explaining 43%)

*Dimensions of Work and Productivity*

From Table 10 we learn that individual productivity is mainly influenced by empowerment, extrinsic job motivation, and job characteristics. The more people think they are competent and the more impact they think they have, the more productive they will be. However there is not much room for improvement here as the employees already gave high scores on the empowerment dimensions. Interestingly, transparency and task interdependency are negatively correlated to productivity. Probably employees fear that they will lose some room for manoeuvre when their work becomes more transparent. Task interdependence is quite high within the Microsoft organization and appears to influence productivity negatively.

Work Dimension	Beta	Sig.	Means	Enhancement opportunities
Empowerment Competence	0,32	0,00	4,23	0,77
Extrinsic Job Motivation	0,29	0,00	3,54	1,46
Empowerment Impact	0,14	0,04	4,27	0,73
Empowerment Self-determination	0,12	0,06	4,27	0,73
Inclination work in Open Office	0,11	0,07	3,33	1,67
Task Identity	0,10	0,07	3,50	1,50
Job Complexity	0,10	0,07	3,52	1,48
<i>Transparency</i>	<i>-0,13</i>	<i>0,04</i>	<i>3,92</i>	<i>1,08</i>
<i>Task Interdependence</i>	<i>-0,14</i>	<i>0,02</i>	<i>4,17</i>	<i>0,83</i>

**Table 10: Regression Table Work Dimensions influencing Productivity Case Microsoft (explaining 42%)**

*Dimensions of Work and Job Flexibility*

The results in Table 11 show that flexibility strongly correlates with empowerment self-determination and workplace mobility. It is interesting to see that work-life balance positively correlates with job flexibility. There are quite a few factors that negatively influence job flexibility. What is unclear yet is why empowerment competence has a negative impact on job flexibility.

Work Dimension	Beta	Sig.	Means	Enhancement opportunities
Empowerment Self-determination	0,37	0,00	4,27	0,73
Workplace Mobility	0,25	0,00	3,46	1,54
Task Identity	0,13	0,03	3,50	1,50
Work-life Balance	0,13	0,03	3,51	1,49
Dynamic Teaming	0,11	0,08	3,84	1,16
<i>Process Modularity</i>	<i>-0,12</i>	<i>0,03</i>	<i>3,60</i>	<i>1,40</i>
<i>Collaboration within Organization</i>	<i>-0,12</i>	<i>0,06</i>	<i>4,21</i>	<i>0,79</i>
<i>Control Workplace</i>	<i>-0,16</i>	<i>0,01</i>	<i>3,03</i>	<i>1,97</i>
<i>Empowerment Competence</i>	<i>-0,16</i>	<i>0,02</i>	<i>4,23</i>	<i>0,77</i>
<i>Extrinsic Job Motivation</i>	<i>-0,19</i>	<i>0,00</i>	<i>3,54</i>	<i>1,46</i>

**Table 11: Regression Table Work Dimensions influencing Job Flexibility Case Microsoft (explaining 36%)**

**Dimensions of Work and Innovativeness**

In the case studies we investigated if and how the self-reported innovativeness correlates with work (place) characteristics. Microsoft employees give an average-high score (3,72) on their innovativeness. Our study shows that this innovativeness correlates most strongly with the intensity of technology use and intrinsic job motivation. Apparently, Microsoft employees associate innovativeness with technology use (this appears also to be the case at De Unie and De Rabobank). It is also clear that empowerment and collaboration in distributed teams is perceived to further the employee's attitude to innovation. Attention should be paid to workplace design and too much collaboration within the work team as it appears to inhibit innovation .

<b>Work Dimension</b>	<b>Beta</b>	<b>Sig.</b>	<b>Means</b>	<b>Enhancement opportunities</b>
Technology usage	0,25	0,00	3,34	1,66
Intrinsic Job Motivation	0,24	0,00	4,08	0,92
Empowerment Meaning	0,15	0,03	4,14	0,86
(Team) member Flexibility	0,14	0,01	3,51	1,49
Willingness to Change	0,13	0,03	3,84	1,16
Career Encouragement	0,12	0,03	3,11	1,89
Empowerment Impact	0,12	0,08	4,27	0,73
Team Distribution	0,11	0,06	3,76	1,24
Inclination work in Open Office	0,11	0,08	3,33	1,67
<i>Distraction Workplace</i>	<i>-0,12</i>	<i>0,07</i>	<i>3,10</i>	<i>1,90</i>
<i>Collaboration within Work Team</i>	<i>-0,17</i>	<i>0,01</i>	<i>4,21</i>	<i>0,79</i>

**Table 12: Regression Table Work Dimensions influencing Change & Innovativeness Case Microsoft (explaining 39%)**

**Conclusions World of Work Microsoft**

The detailed analysis provides the following conclusions:

Microsoft is a thought leader with regard to the development and implementation of new ways of working. For the company it is a paradigm shift in a very competitive market. One important trigger is the development of its new headquarters in the Netherlands and to provide new ways of delivering value to customers.

Microsoft scores relatively high on most current work dimensions but relatively low on “workplace (distraction, control, and satisfaction)” and on “work-life balance”.

With regard to perceived individual performance Microsoft scores relatively high on “employee satisfaction”, “job flexibility”, and “innovation” but not that high on “productivity”.

With regard to productivity two work dimensions will play a positive role: empowerment competence and extrinsic job motivation. More transparency and task interdependence will have a negative impact on productivity.

### 3.7 The World of Work of De Unie

#### History

The First labour unions in the Netherlands were raised between 1860 and 1870. The growth of the industrialization had significant impact on society. The working conditions were bad, child employment was a normal fact, workdays were very long and the position of employees was very weak. In this period employees started to unite and to “fight for their right”.

De Unie is established from several mergers between different independent unions of different sizes. The most important facts in the history of De Unie will be described below:

**1908** *Foundation of the Dutch Catholic union of Trade/Office/ Store employees “Sint Franciscus van Assisie”*. In 1908 the first union started with 88 members. Due to world war I the first years there was just a small growth of members. But at the end of the war there were 2250 members and at the year 1924 the total number of members was about 4400.

- **1912** *Foundation Dutch Catholic “Werkmeestersbond” Sint Johannes de Doper*. The second union in the Netherlands, started with just 20 members.
- **1916** *Foundation Dutch Catholic union of trade travelers/ agencies “Sint Christoffel”*.
- **1919** *Foundation Dutch Catholic union of Technical and Chemical employees “Sint Bernulphus”*.
- **1967** *Foundation Dutch union of Highly qualified employees, Unie BHP*.
- **1972** *Foundation De Unie BLHP*
- Due to a merger between the above mentioned unions the Unie BLHP is established.
- **1995** *Name of Unie BLHP is changed in DE UNIE*.
- **2000** *Foundation De Unie Zorg en Welzijn*.
- **2003** *Foundation Unie Facet BV*.
- **2003** *New head office Unie Plaza, a new and unique office concept, opens in Culemborg*.
- **2005** *Foundation De Unie Personenvervoer*
- **2006** *Foundation Internetvakbond*

#### Profile

With members employed in the industrial, service and health care sectors, De Unie is a modern, independent trade union that goes for custom-made solutions. De Unie contributed to over 300 collective agreements and represents the shared interests of employees in mergers and reorganizations but also members’ individual interests in the areas of work, income and personal development.

De Unie is a typical network organization and has an unbiased outlook, with no influence or interference from political parties or religious or ideological organizations. De Unie targets on professionals and are well represented among middle and senior management.

From eight regional offices throughout the Netherlands, union officials, lawyers and secretaries keep in direct contact with the members of De Unie. The management and service departments are located at the head office “Unieplaza” in Culemborg. At this moment 220 employees work for De Unie and the total number of members nowadays is over 97.000.

De Unie supports its members in collective agreement disputes, helps them to draft or revise contracts of employment and offers them assistance in the event of reorganizations, labour disputes and dismissal. According to other labour unions, De Unie distinguishes itself by providing personal support based on in-depth understanding of businesses and collective agreements.

In the area of income, De Unie provides individual members with advice in particular on taxation, pensions and social security, but De Unie also welcomes queries about other matters relating to income.

De Unie aims to be a trade union that helps its members to develop their personal strengths. The Career Management service helps people to shape and manage their own professional development. Members can arrange career advice interviews through De Unie. For the members of De Unie there are also courses organized on topics such as effective job applications, personal effectiveness and networking.

In addition to the basic products and services of a labour union, De Unie offers its members other products and services under labels such as UnieReizen (travel) and Member Benefits (financial advice, insurance and mortgages). In order to create a network of partnerships De Unie works together with partners who share the philosophy of socially responsible entrepreneurship.

### The Dutch trade union movement

About 1,900,000 people are members of Dutch trade unions. In terms of the total working population, 25 out of every 100 employees are unionized. The Netherlands has three trade union confederations: the FNV (Federation of Dutch Trade Unions), the CNV (National Federation of Christian Trade Unions) and the MHP (Trade Union Confederation for Middle and Senior Management). De Unie is, via the union of independent trade organizations, a member of the MHP (Figure 12).

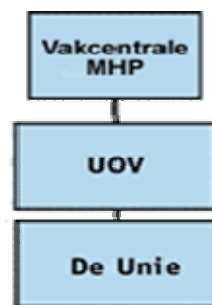


Figure 12: Union Context

De Unie is aware of the fact that we live in a global society. Unions should meet the challenges this brings along. Therefore De Unie is affiliated to Union Network International [UNI], the European Metalworkers Federation [EMF], the International Metalworkers Federation [IMF] and the International Travelworkers Federation [ITF].



**Organization**

The central point of all activities of De Unie are always the members: who are these members and what do they need? The organizational structure of De Unie is presented in Figure 13.

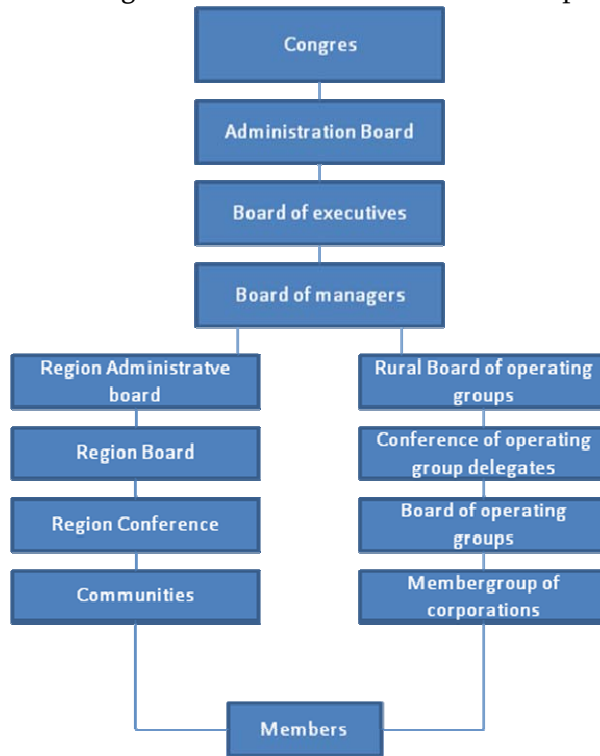


Figure 13: Organization chart De Unie

The way De Unie is organized for its daily operations can be seen in Figure 14.

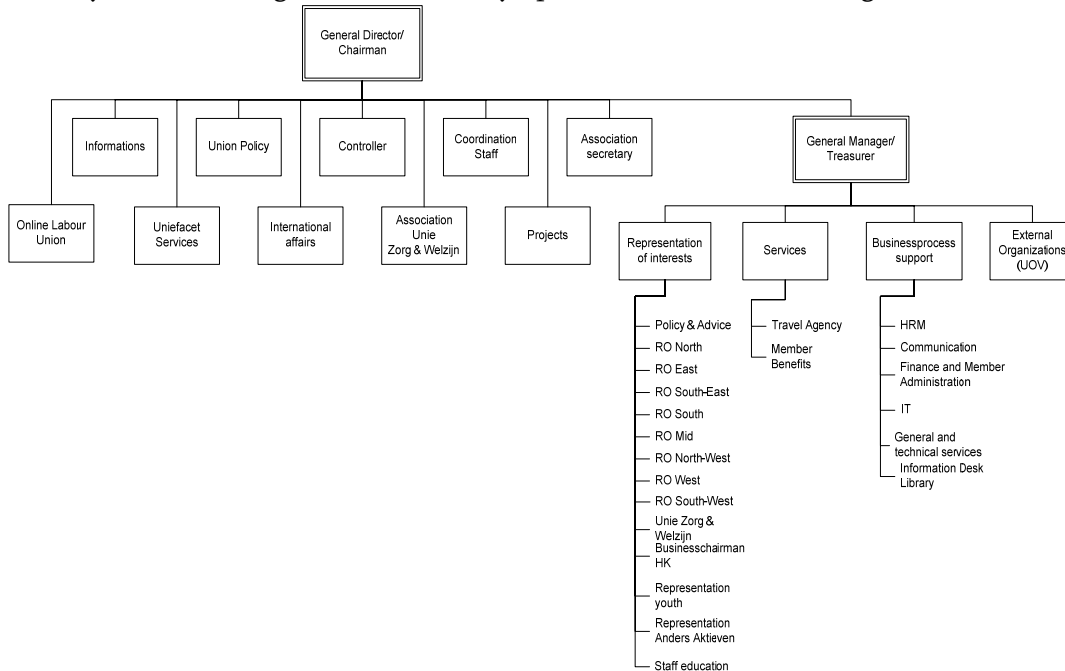


Figure 14: Organization chart Operational Structure De Unie

This organization chart shows the different departments of De Unie like for example Unie Zorg en Welzijn. The model also shows the structure of the eight region offices.

### **Mission and strategy**

De Unie has set the following target for herself: in a world of life and work where everyone is constantly faced with fresh choices, to set out together and to find realistic solutions to individual needs and matters relating to work, income and personal development.

De Unie attaches great importance to carefully handle the interests of society and those of members, staff and stakeholders, in line with her focus on socially responsible entrepreneurship.

### **Culture**

The culture of De Unie can be best described as an open culture with a high level of collegiality. This results in an open way of communication between the employees, although it must be said that this remains mainly on each of the region offices separately. The communication between the different offices tends to be difficult in some ways.

The relationship between employees and the management team is not that open as it is between the employees. Many decisions are made top-down, which results in some resistance and relative low trust between employees and the management team. Another important issue might be that the chosen policy and direction of the management team is not that clear to everyone. The main pillars of the current policy are perceived to be weak. The communication between employees and the management team is more formal. The management team is settled in the head office of De Unie in Culemborg and from this fact regional offices have a certain resistance to the “head office” as to their opinion this represents the management.

In general employees of De Unie can be described as “opinionated”, in a positive way. For their work it’s important to be opinionated in order to contribute agreements and represent the rights of their members. The other implication of this “opinionated employees” is the fact that they watch all steps of the management team very critical.

The head office, Unieplaza, has opened her doors in 2003 and has got a deeper function instead of just a building. The Unieplaza acts as a metaphor for De Unie and represents the character and culture of the organization. The Unieplaza building stands for transparency and transformation. Transparency is represented via clear and open communication, transformation via openness to new changes and opportunities. The building characterizes responsible entrepreneurship in its design, use of materials and energy supply and in its transparent labour organization and flexible working places. More about the Unieplaza can be found in the section Process.

### **Internal trigger for New work concepts**

An internal trigger for De Unie is that the current organizational structure is used for about twenty five years now. The organizational structure is region bounded (eight region offices and one head office) which does not fit with the current situation in our society. The

structure will have to be changed into a project or sector-based structure in order to go deeper into the core businesses.

In the current situation employees of a specific region office come together to discuss work related issues twice in a month. They only know what happens within their own region, but what is happening in other regions will remain in other regions. De Unie must concentrate on the fact that there are some different main sectors with a different structure and different issues that can not be served well within the current region structure.

For example; the finance sector differs a lot from the healthcare sector and therefore requires a different approach.

Technology will be an important enabler to change into a project or sector related structure. This is especially the case, when people who are geographically dispersed have to meet. In the recent situation people have to travel a lot for (small) meetings. Virtual meetings are identified to be an effective solution to this problem; almost everyone has got a laptop.

#### **External trigger for New work concepts**

De Unie is aware of the changes in society and in the way work is going to change in the future. One of the issues mentioned by all interviewed employees is the change from “industrial employment” to “knowledge employment”. In fact this is the knowledge worker who is central in our study. Although management of De Unie is aware of this change, they realize that the organization in general still operates as a traditional labour union.

The traditional market of De Unie is shrinking. The number of members is not growing anymore; in fact it is going down. When looking to the competitive labour unions in the Netherlands (FNV and CNV) De Unie is the most modern labour union. FNV and CNV have a more traditional type of members, whereas the member population of De Unie consists a relative high number of knowledge workers. Also FNV and CNV face the problem of a decreasing number of members. FNV is starting new media campaigns within the next few months. To stop the decrease of members, De Unie is working on new concepts that fit with the needs and expectations of the members and the way they live and work. More about new concepts will be discussed in the paragraph “New concepts”.

#### **Process**

De Unie is already working with a few so called new-work related attributes. First of all the head office Unieplaza is facilitated with flexible workplaces at all departments. People can choose to work in cocoons for effective meetings, concentration rooms or flexible workplaces between colleagues.

Secondly working at home is already a common fact at De Unie. A lot of employees, when possible in their function, work one day a week at home. People are not forced to work at home. But it might be clear that an organization who claims to be progressive, management encourages this way of working. Interviews made clear that employees of De Unie are satisfied with this possibility and the offered hard and software.

Although there might be some resistance to decisions made by the management, the adoption level of new technologies or other concepts related to “the new world of work” is perceived

to be high. Employees are not afraid of new methods and applications and are well willing to use them.

For the year 2008 the number one priority of De Unie will be to keep the number of members at least equal, but moreover De Unie will try to create growth. Strategic investments will focus on employees that work as self-employers without employees, retired employees and retirement organizations.

The online labour union (described in the section below) will be redesigned according to the needs of the members and will be used more actively. A new project manager for the online union started this summer and is willing to improve the interaction possibilities with the members and the topicality of the content on the site as well as the newsletters.

Internal aspects for the year 2008 will be to invest in employees in terms of competence management and leadership styles. Another important aspect that will change is the recent region based structure. De Unie planned to change the structure in a project or sector related structure as described above.

### New concepts

Like mentioned before; De Unie is aware of the fact that we live in a global society and that there is a change in the field of work and in the use and usefulness of new media types. Since there is no or just a few percent growth in the number of members, De Unie is searching for new ways to increase or just at least keep the level of members equal.

One specific type of media that De Unie is using in this case is the Internet. The growth of the internet has led to a change in society. People got the possibility to conduct large databases of information and can get in touch with people from all over the world. The internet also changed marketing communications and the way people interact with each other.



Figure 15: De Unie on the Internet

De Unie is the first labour union in the Netherlands that started with a labour union on the internet; the online labour union ([www.internetvakbond.nl](http://www.internetvakbond.nl)). One of the differences with the labour union in the traditional environment is the price of a membership. For the traditional labour union a standard price is set, whereas for the online labour union members pay a small standard price for which they can carry out one question. After this they will pay for each query separately.

Due to the online labour union, which is a new way to perform for De Unie, the nature of collaboration with its members is changing. There will be less face-to-face contact and there will be more virtual contact between people who are geographically dispersed. Due to the possibilities offered by the internet, the interaction will not be limited to just De Unie and the members of the online labour union but also interaction between the members is stimulated. In line with the concept of the online labour union is the concept of [www.ruziemetdebaas.nl](http://www.ruziemetdebaas.nl). This site acts as a sort of platform to discuss (starting) conflicts with the boss. The site is free to access for everyone. Main goal is to give people a deeper understanding about the conflict itself, their position in this conflict, and off course possible solutions. People can read experiences of other people and can react on this. When a person has a question for an expert of De Unie, the same concept as for the online labour union is used. People automatically become a member of the online labour union in that case.



Figure 16: Medstick

Another new and unique concept, applicable on the site of the online labour union, is the Medstick (Figure 16). The Medstick is a completely electronic mobile medical database (USB stick) with the same size as a normal credit card. The Medstick consists all the medical information of the owner of the stick. The main advantage is that people who frequently travel, people who have a high medical risk, older people, people with high-risk jobs etc., always have their medical file at hand in case there is an emergency. This concept is perfectly in line with the mission of De Unie to find realistic solutions to individual needs and matters relating to work, income and personal development.

### The Union WoW Results and Analysis

In August 2007 the questionnaire was sent out to 220 employees of the Unie. After cleaning the data set 128 filled out questionnaires could be used for this case study. The radar plot (Figure 17) gives an overall impression of the scores on a five-point scale on the dimensions of the WoWf.

As an organization De Unie differs in many respects compared to the Microsoft organization. A few general observations can be made:

- Although the pattern of the scores in the radar plot shows clear similarities with the pattern with the radar plot of the Microsoft, the scores of De Unie show larger differences and are more pronounced.
- De Unie employees score strikingly low ( $\leq 3$ ) on workplace mobility, team distribution, career encouragement, trust in management, inclination work in open office, and reward systems;
- De Unie employees score extremely high on interaction outside the organization, work design characteristics (esp. task variety, task identity, skill variety), relationship with colleagues and superiors, empowerment and attitudes towards new technologies.

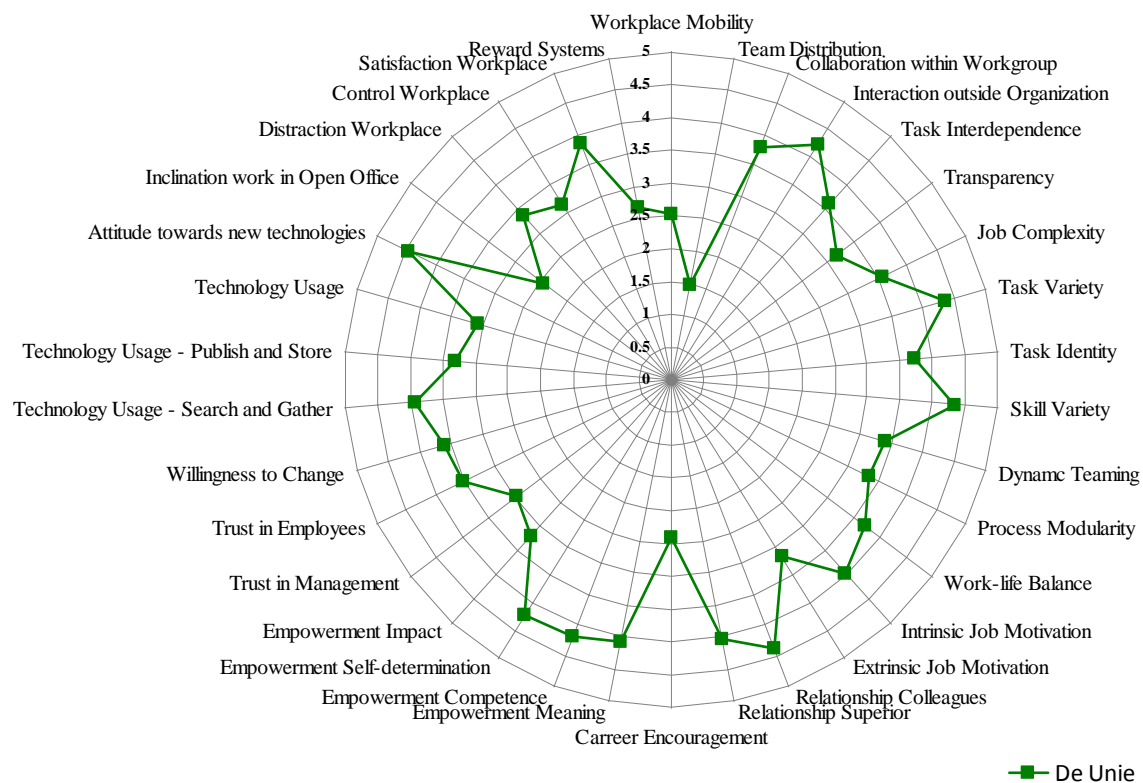


Figure 17: Dimensions of Work Independent variables Case The Unie (T<sub>0</sub>=August 2007, N=128)

From our research perspective it is very interesting to study De Unie, as this labour union started introducing new world of work concepts already in 2003. For this reason we expected relative high scores on transparency, a preference for openness, intensive technology usage, high scores on workplace related aspects and workplace mobility

In spite of the ambitions to turn De Unie into a ‘virtual union’, workplace mobility is low. Moreover, employees gave moderate scores on workplace aspects. The low score on team distribution is not surprising as the work is primarily done in a national setting. There is hardly any collaborative work to be done across time zones.

Based on the relatively high scores on work characteristics we can conclude that work activities are pretty good organized and meet the skill variety. The scores on the radar plot show that employees have good relationships with superiors and colleagues but score significantly lower on trust in management and trust in employees. With respect to workplace related issues the employees indicate that they prefer a certain degree of privacy on the workplace and that they are quite satisfied with the current workplace situation.

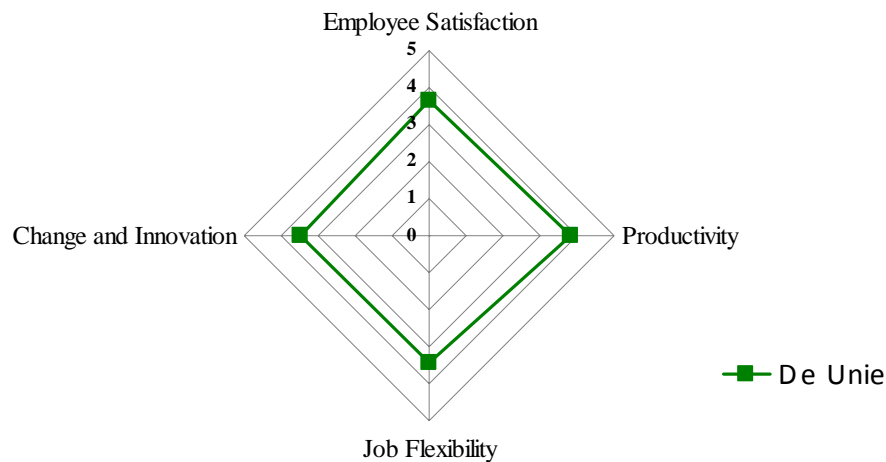


Figure 18: Dimensions of Work Dependent variables Case The Unie (T0=August 2007, N=128)

### Dimensions of Work and Employee Satisfaction

Employee satisfaction is for 40% explained by the factors that are listed in Table 13. The table gives a clear picture of what employees think is relevant for them. Employee satisfaction has less to do with task characteristics, workplace characteristics or technology. Employee satisfaction primarily correlates with relational aspect of work and empowerment. With respect to trust in management and career encouragement, it becomes clear that there is room for improvement. Dynamic teaming influences employee satisfaction negatively.

Work Dimension	Beta	Sig.	Means	Enhancement opportunities
Trust in Management	0,37	0,00	2,95	2,05
Empowerment Meaning	0,29	0,00	4,06	0,94
Career Encouragement	0,21	0,02	2,39	2,61
Relationship Colleagues	0,20	0,05	4,36	0,64
<i>Dynamic Teaming</i>	<i>-0,16</i>	<i>0,05</i>	<i>3,37</i>	<i>1,63</i>

Table 13: Regression Table Work Dimensions influencing Employee Satisfaction Case The Unie (explaining 40%)

### Dimensions of Work and Productivity

Productivity is for 39% explained by the factors that are listed in Table 14. Like in the Microsoft and Rabobank organizations empowerment competence appears the most important factor contributing to productivity. Quite different from Microsoft and Rabobank the second and third most important work dimensions are skill variety and control workplace. In contrast to workplace control, there is hardly any room for improvement for empowerment competence and skill variety. The negative correlation between workplace mobility and productivity deserve managerial attention as increasing employee flexibility was one of the objectives when new work concepts were introduced.

Work Dimension	Beta	Sig.	Means	Enhancement opportunities
Empowerment Competence	0,46	0,00	4,19	0,81
Skill Variety	0,23	0,09	4,34	0,66
Control Workplace	0,22	0,04	3,15	1,85
Empowerment Impact	0,20	0,04	3,20	1,80
Work-life Balance	0,18	0,05	3,69	1,31
<i>Workplace Mobility</i>	<i>-0,02</i>	<i>0,85</i>	<i>2,52</i>	<i>2,48</i>

Table 14: Regression Table Work Dimensions influencing Productivity Case the Unie (explaining 39%)

### Dimensions of Work and Job Flexibility

Job flexibility is for 50% explained by the factors that are listed in Table 15. The most interesting result is here of course that workplace mobility correlates rather strongly with job flexibility, while De Unie employees indicate at the moment workplace mobility rather low. It further shows that a good relationship with superior is important to stimulate flexibility. At the moment this relationship is quite good, which suggest there exists a sound base to increase flexibility. It is unclear right now why empowerment competence negatively influences job flexibility.

Work Dimension	Beta	Sig.	Means	Enhancement opportunities
Workplace Mobility	0,40	0,00	2,52	2,48
Empowerment Self-determination	0,32	0,00	4,21	0,79
Relationship Superior	0,16	0,08	4,03	0,97
Member Flexibility	0,16	0,10	3,69	1,31
Work-life Balance	0,15	0,07	3,69	1,31
<i>Empowerment Competence</i>	<i>-0,18</i>	<i>0,04</i>	<i>4,19</i>	<i>0,81</i>
<i>Collaboration within Organization</i>	<i>-0,19</i>	<i>0,06</i>	<i>3,79</i>	<i>1,21</i>

Table 15: Regression Table Work Dimensions influencing Job Flexibility Case the Unie (explaining 50%)

### Dimensions of Work and Innovativeness

Innovativeness is for 41% explained by the factors that are listed in Table 16. It is interesting to observe that innovativeness is positively influenced by extrinsic and intrinsic job motivation. Workplace mobility influences innovativeness to some extent. As the workplace



mobility is quite low at the moment it is interesting to look how this can be improved in a way that it contributes to innovativeness. The negative correlation between satisfaction workplace and innovativeness needs to be investigated into more detail

Work Dimension	Beta	Sig.	Means	Enhancement opportunities
Extrinsic Job Motivation	0,26	0,01	3,17	1,83
Willingness to Change	0,24	0,01	3,61	1,39
Intrinsic Job Motivation	0,19	0,07	3,96	1,04
Control Workplace	0,17	0,10	3,15	1,85
Technology usage	0,14	0,10	3,07	1,93
Workplace Mobility	0,07	0,52	2,52	2,48
<i>Satisfaction Workplace</i>	<i>-0,19</i>	<i>0,06</i>	<i>3,87</i>	<i>1,13</i>

**Table 16: Regression Table Work Dimensions influencing Change & Innovativeness Case the Unie (explaining 41%)**

### Conclusions World of Work De Unie

De Unie is an early adopter in the Netherlands of new ways of working. It is developing a new way of interacting with its members by setting up the internet-enabled union community.

De Unie scores medium on most dimensions but relatively low on “inclination open office”, “team distribution”, “transparency”, “career encouragement”, “trust in management”.

With regard to perceived individual performance De Unie scores relatively medium on “employee satisfaction”, “productivity”, and “innovation” but a little lower on “job flexibility”.

To improve “job flexibility” “workplace mobility” and “empower self determination” might play a positive role. More “empowerment competence” and “collaboration within the organization” might have a negative impact on “job flexibility”.

### 3.8 The World of Work of Rabobank

As a triple-A bank Rabobank combines a high level of financial performance with a high level of social responsibility. The bank is a cooperative bank where local banks are member and local relationships are used to provide customers with the best products and services. For a bank that needs to be open 24 hours, seven days a week new ways of working will be implemented. The case indicates how Rabobank combines new ways of working to enhance collaboration with the need for knowledge workers to become more risk takers and more entrepreneurial.

#### Organization and context

The Rabobank Group is a full-range financial services provider operating worldwide. The group's core business is formed by the local Rabobank organizations and their clients. Besides supervising these local banks, Rabobank The Netherlands also acts as a wholesale bank, a bankers' bank to the Group and is the holding company of a large number of specialized subsidiaries, this is illustrated in Figure 19.

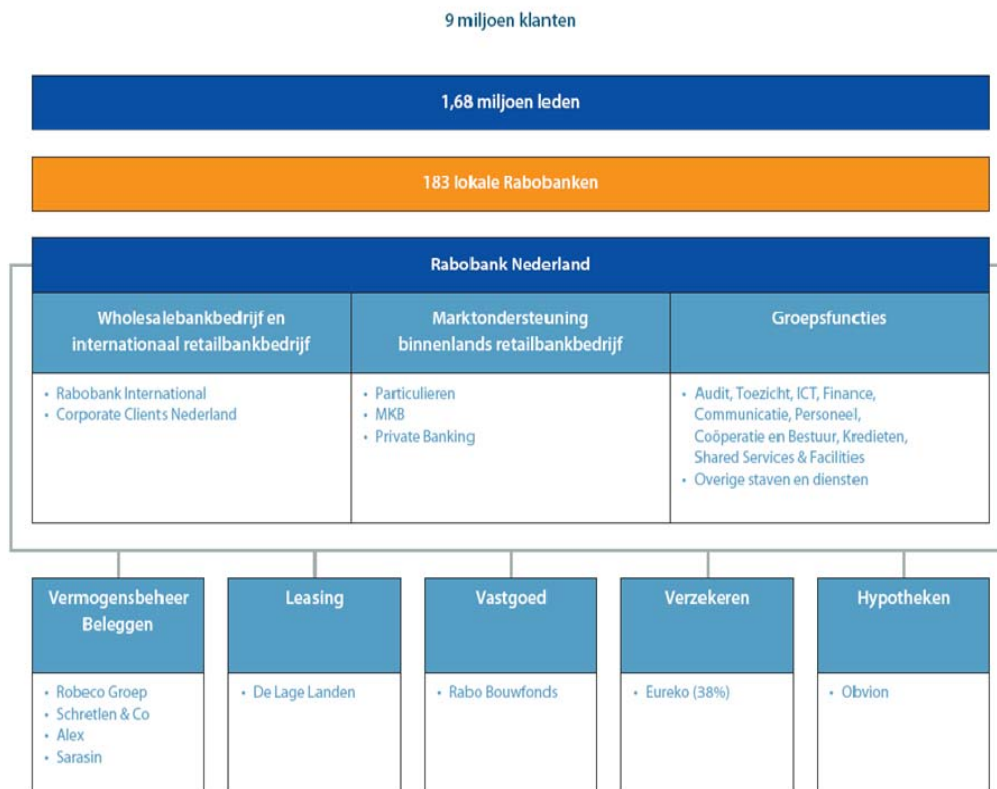


Figure 19: Organization chart Rabobank group

The Rabobank creates customer value by providing the best financial services for their clients, ensuring the continuity of these services and demonstrating commitment to their clients and their environment.

### **Mission**

“The Rabobank puts the collective interest of people and communities first. From this interest, Rabobank wants to be an advancing and innovating force that contributes to sustainable development of prosperity and well-being. The goal is to realize current and future ambitions of people and communities, through amplifying the mutual collaboration and providing the best financial solutions possible”.<sup>2</sup>

### **History**

The Rabobank commenced from a merger between the Coöperatieve Centrale Raiffeisen-Bank in Utrecht and the Coöperatieve Centrale Boerenleenbank in Eindhoven in 1972. These two banks were founded in 1898 by farmers, who decided to cooperate to get access to capital. Since both banks successfully practiced banking principles in the same sector for a very long period, the merger was a logical partnership. In 1980 the bank officially started to use their current name – Rabobank - which is comprised of the first letters of the two original cooperative banks. Today, Rabobank The Netherlands comprises of 218 independent local Dutch Rabobank organizations and a central organization, which provide financial services and products to the Dutch retail and business markets. Besides the Dutch market, the Rabobank started to enter the international market as well under the flag of Rabobank International, which was only formally established in 1996, although the first international activities already took place in the 1970s<sup>3</sup>.

### **Key figures**

Overall, the Rabobank Group has offices in 38 countries with over 50,000 employees. In 2006 the Rabobank Group had a turnover of over 10 billion euro and a net profit of approximately 2.4 billion euro<sup>4</sup>.

### **Culture**

The Rabobank has a harmonizing relationship with its environment. Without a sustainable direction live itself deteriorates, thus sustainable development is a must for the Rabobank. The orientation on sustainable development is exemplified in Rabobank’s latest investment in Wind park Q7. The Rabobank financed, together with two other banks, the building of 60 wind mills, which will deliver ‘green’ electricity for 125,000 households in the Netherlands<sup>5</sup>. Further illustrations of the harmonizing role of the Rabobank with the environment come forward in their book “Toekomst door Samenspel”<sup>6</sup>. In this book the investment of a new office for the Rabobank with room for the local library is described. Due to lack of appropriate housing a local library was about to be closed, the Rabobank - in need

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<sup>2</sup> Rabobank (2007) Profiel Rabobank groep, Rabobank Groep Halfjaarverslag 2007, p33.

<sup>3</sup> [www.rabobank.com/content](http://www.rabobank.com/content)

<sup>4</sup> [http://www.rtl.nl/\(/financien/rtlz/home/\)/components/financien/rtlz/2007/weken\\_2007/10/0307\\_1200\\_meer\\_winst\\_rabobank.xml](http://www.rtl.nl/(/financien/rtlz/home/)/components/financien/rtlz/2007/weken_2007/10/0307_1200_meer_winst_rabobank.xml)

<sup>5</sup>

[http://www.rabobank.nl/particulieren/servicemenu/nieuws/rabobank\\_nieuws/rabobank\\_gaat\\_voor\\_duurzaamheid](http://www.rabobank.nl/particulieren/servicemenu/nieuws/rabobank_nieuws/rabobank_gaat_voor_duurzaamheid)

<sup>6</sup> Rabobank (1998) Toekomst door Samenspel, Een greep uit de Samenspel-activiteiten

of a new office - designed it such that the local library could be housed in their new office. Furthermore it exemplifies the organization of a 'Farmers day' by the Rabobank, on this day old farmer trades were displayed, which represents the connection of the Rabobank with its roots.

The nature of human activity within the bank can be defined as proactive and partly harmonizing. Partly harmonizing since interaction takes place and information is shared within the departments, however information sharing throughout the departments is less common.

Rabobank The Netherlands is improving the interaction and information sharing culture within departments by introducing instant messaging and Share point. Currently, it is developing a new way of working that goes hand in hand with a big cultural change: Rabo Unplugged. The real transition to this new way of working will start when Rabobank The Netherlands moves to the new head office in 2010.

### **Triggers for introduction of new work concepts (Rabo Unplugged)**

#### **Internal**

An internal trigger for the introduction of Rabo Unplugged for the Rabobank is the need for reduction of 'internal regulation'. Currently, the Rabobank is bound to a large amount of rules, developed in-house or put on by the external environment (politics or (inter)national rules) both steadily increasing. The increase in regulation will eventually make the Rabobank a rigid organization. Although the external regulations will stay, the challenge lies in reducing the amount of internal regulation (procedures), to create a result oriented environment instead of a rule-driven organization<sup>7</sup>. The Rabobank wants to reduce the amount of 'internal regulation' in such a way that the Rabobank becomes more agile with the overall goal to increase client focus. Through Rabo Unplugged the employees of the Rabobank will be empowered, hereby emphasizing self-control, which should allow for reduction of "internal" regulation.

Another internal trigger for introduction of Rabo Unplugged has to do with expected human resource issues. A substantial part of the current workforce of the Rabobank will leave the organization for retirement within 10 years, multiplied with a shrinking workforce in the developed countries in the coming 50 years triggered the Rabobank to introduce a working concept that besides increase productivity and job satisfaction creates an image that attracts the new workforce as well.

#### **External**

The change in work style is triggered by changing client demands. Customers of the Rabobank want to be able to consult about and close a mortgage in the evening or maybe even at night. Being able to quickly deliver the best services 24/7 requires a different

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<sup>7</sup> Interview H. van Egmond dd 28-3-2007

approach to working. Rabobank needs to become a flexible organization which can easily adapt to changing customer demands.

### **Rabo Unplugged**

In 2004, the board of directors of the Rabobank started planning to build a new administrative centre in Utrecht. From their own experience they knew that on Friday afternoon most staff would leave early and a lot of offices are left unused. Amongst others, this made them realize that the new office offered them possibilities for a new building concept, and a different view on working itself.

In 1996 Interpolis pioneered by introducing a flexible way of working. Combined with a new flexible office, Interpolis turned their organization up-side-down to an organization with a result-oriented and entrepreneurial culture, with great success<sup>8</sup>. The former CEO of Interpolis now works in the Board of Directors of Rabobank. He will make use of his experience and introduce a similar result-oriented and entrepreneurial culture within the Rabobank group. The new office will have flexible workplaces and physical presence won't be required anymore – it's about the results and the way people work together. The new office will become a meeting place with 'clubhouses' and frequent social events, stimulating the contact between staff and staff and managers. The most important reason to go to the office will be collaboration (internally and externally with clients). In 2005 a project group of the Rabobank started to develop this new work style. Originally they started the project under the banner "Het Nieuwe Werken" (The New Work), since 2006 however the Rabobank is using the term "Rabo Unplugged", inspired by the popular series of unplugged concerts on MTV. These concerts consisted of a totally different performance by the artists, due to the unique character of the program it became very popular in a short period of time. The name Rabo Unplugged is about the new way of working for the Rabobank (Rabo Unplugged, 2007).

In short, Rabo Unplugged is a way of working that houses employees with a telecommuting, cooperative and result-oriented mindset<sup>9</sup> in an innovative<sup>10</sup> flexible office, designed to improve the client focus. It is characterised by releasing unnecessary regulations, working anytime, anywhere facilitated by the newest technology, better knowledge sharing, more cooperation, taking responsibility, performance appraisal on results and more client focus (Rabo Unplugged version 1, 2006).

### **Process**

The implementation process will be based on different pilots and engagement meetings. The final transition to the new work style will be the move of employees to the new head office in

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<sup>8</sup> <http://www.interpolis.nl/overinterpolis/helderwerken/kijkopwerken/default.aspx>

<sup>9</sup> "The Telecommuting Mindset is one that strives to apply technology in ways that more effectively achieves your objectives (*as opposed to applying them to do the same job more effectively*) and which seeks to make everything that is available physically to also be available electronically, i.e., to access "anything" from "anywhere," at "anytime". In other words it seeks physical-electronic "access parity" for all services deemed necessary for your lifestyle." <http://www.telecommuter.org/defs/Def-Mindset.html>

<sup>10</sup> In innovative office is an office which is inspiring and in which people feel comfortable to work, which should both lead to increased performance. (<http://www.veldhoen.nl/>)

2010. The ambition is that in 2012 every employee of Rabobank The Netherlands will work according to the concept of Rabo Unplugged. Targets are set to guide the transition. The change and communication strategy is characterized by temptation. By surprising and fancy activities, employees of Rabobank The Netherlands are tempted to do things differently.

As part of the implementation process a SWOT was been made up by the Unplugged team<sup>11</sup> for the implementation of Rabo Unplugged (see Table 17). This helped them to focus their interventions.

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Many self-employed professionals work for Rabobank, who are used to changes</li> <li>• There is enthusiasm among staff for a different way of working</li> <li>• Current culture based on goodwill and enthusiasm</li> <li>• Growing focus on customer and service orientation</li> </ul>	<ul style="list-style-type: none"> <li>• Island Culture: lack of collaboration across department boundaries</li> <li>• Slow decision making (reconsidering previous decisions)</li> <li>• Slow adoption of new technology</li> <li>• Lack of integral responsibility for the work style within Rabobank Netherlands</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Making Operation Service Concrete</li> <li>• Promote openness and acces</li> <li>• Further increase image as attractive employer</li> <li>• Opportunity to confirm brand values and core values</li> <li>• Improve knowledge sharing and collaboration</li> <li>• Improve work-life balance</li> <li>• Involvement local banks</li> <li>• Create synergy between group divisions</li> </ul>	<ul style="list-style-type: none"> <li>• Losing human control and social cohesion</li> <li>• Employees lack proper skills for digital work style (optimal usage of IM/IS facilities)</li> <li>• Turning the balance in leadership style in the direction of result-orientation at the cost of human orientation</li> <li>• Resistance to change: preserving the old work style</li> <li>• Managers do not set the right example</li> <li>• Difficulty to let go of physical workplace and archives</li> <li>• No adequate knowledge management (competitive intelligence)</li> <li>• Lack of integral vision in approaching New Work concept</li> </ul>

Table 17: SWOT analysis implementation Rabo Unplugged within Rabobank (van Egmond et al, 2005)

**Effects**

The expected effects of Rabo Unplugged are in essence improving the effectiveness by facilitating collaboration and knowledge sharing (within and outside the organization) independent of time and place;

<sup>11</sup> Van Egmond et al (2005) Het nieuwe werken - de richtingen, Rabobank internal document

- Creating a optimum fit between work processes, information and applications;
- Enhancing the entrepreneurship of the employees.
- And reducing costs via for instance virtual offerings of services, efficient use of space, rationalizing document and content management systems.

### **Rabobank WoWf Results and Analysis**

Rabobank has offices in 38 countries with over 50,000 employees. In 2007 the WOWf survey was held under a population of 350 employees working in two departments 'Workplace Services' and 'Application Services' both belonging to the IT group of this global financial institution. 'Workplace Services' manages all workplace related infrastructure except the telephone platform for approximately 6,000 workplaces in the central organization and 45,000 workplaces at the local branch offices. They are for instance responsible for the introduction of Windows Vista and the use of PDAs. The department comprises of approximately 135 employees. The department 'Application Services' employs approximately 215 employees. They manage all banking applications; the one's developed in-house as well as the purchased applications, for instance CRM, SAP, and mortgage-applications. The questionnaire was administered one month prior to a move of both departments to a new office building. In total 191 complete responses were received, yielding a response rate of 53.4 percent. The demographic data illustrate that the majority of the respondents are male, in the age of 35 – 44, with a Bachelor's degree, are employed in the IT area and have no supervisory responsibility. Prior to further statistical analysis, the data of both departments were compared. It appeared that both departments perceived the work characteristics almost equal. Since there were only slight differences the data of both departments were combined improving the reliability of the statistical analyses.

The employees of the two departments are cooperative, they are very willing to share information and cooperate in teams to get the work done. Information sharing and cooperating between departments is often done as well. The Rabo employees gave relatively low scores on interaction outside organization. Of course, this is not surprising as the respondents work with IT departments which primarily serve other departments and divisions within the bank. The employees have a high intrinsic job motivation, that is they enjoy solving new and complex problems, and they are not highly extrinsically motivated. They perceive a very good relationship with their colleagues and superiors and trust their colleagues on treating them fairly and making sensible decisions for the firm's future, the trust in management is a little lower. On average they are encouraged in their career two to three times. The employees perceive a high variety in the job and perceive themselves as highly capable for doing the job. They agree on having autonomy in determining how to do their job, however they have only little impact over what happens at their department. The employees use technology to search and gather for information inside as well as outside the organization, and for publishing and storing information for internal use. Publishing information for external use occurs seldom. Furthermore the employees perceive low mobility that is they work mostly at the office and rarely collaborate with foreigners and perceive to be unable to personalize their workplace.

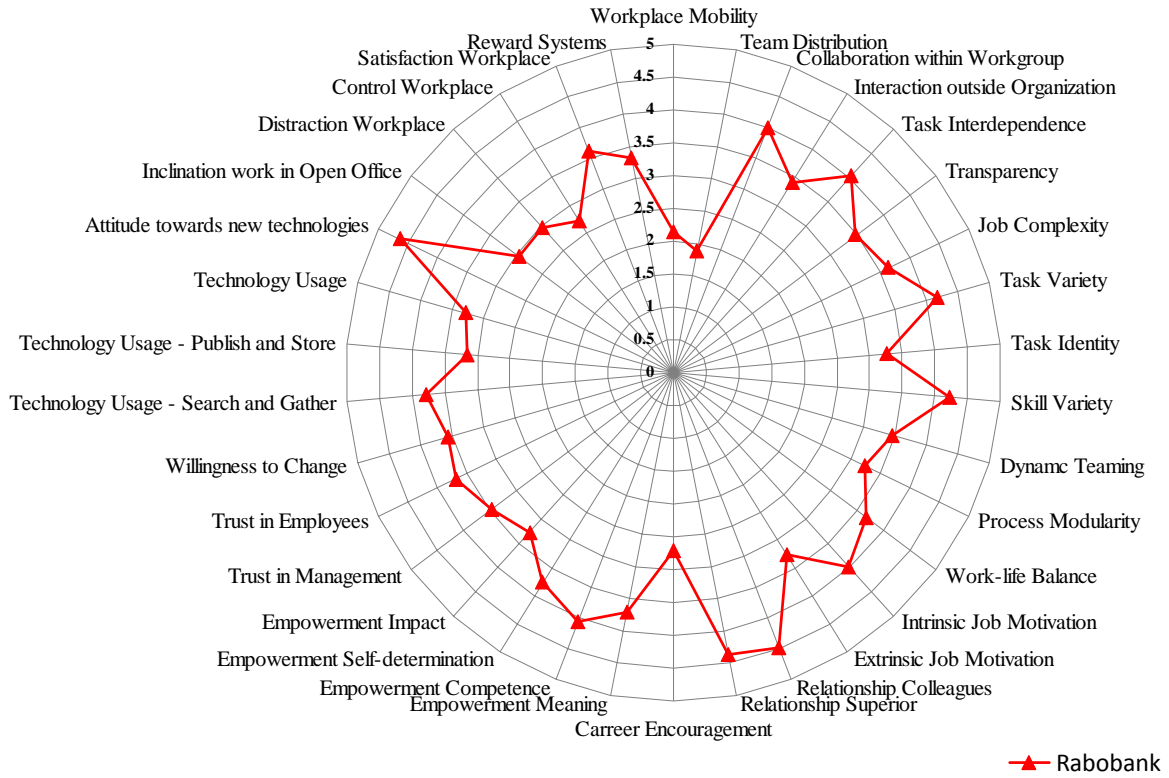


Figure 20: Dimensions of Work Independent variables Case Rabobank (T<sub>0</sub>=September 2007, N=191)

We also analyzed the scores for Rabobank employees in both IT departments with respect to the performance dimensions of the employees. The employees indicate that they are satisfied (average level 3.85) and perceive themselves to be productive (average level 3.82). They experience to have some job flexibility (average level 3.13) in what work they do and where and when to do it. And they are a bit innovative (average level 3.55), given that they agree slightly on finding and trying out new approaches to handle situations.



Figure 21: Dimensions of Work Dependent variables Case Rabobank (T<sub>0</sub>=September 2007, N=191)



### Dimensions of Work and Employee Satisfaction

There are quite a few factors influencing employee satisfaction at Rabobank (Table 18). Over 40% of employee satisfaction is explained by these factors (7 positively and 2 negatively). Empowerment meaning, workplace satisfaction, and member flexibility have the biggest impact on employee satisfaction. For all three dimensions there is room for improvement. Rabo employees score moderate on extrinsic job motivation that negatively influences employee satisfaction. It is clear that there is room for improvement, especially in regard to career encouragement. On average Rabobank employees are encouraged two to three times in their career.

Work Dimension	Beta	Sig.	Means	Enhancement opportunities
Empowerment Meaning	0,34	0,00	3,72	1,28
Satisfaction Workplace	0,24	0,00	3,62	1,38
Member Flexibility	0,23	0,00	3,51	1,49
Task Identity	0,17	0,01	3,27	1,73
Career Encouragement	0,16	0,01	2,71	2,29
Interaction outside Organization	0,14	0,05	3,41	1,59
Willingness to Change	0,13	0,07	3,59	1,41
<i>Extrinsic Job Motivation</i>	<i>-0,11</i>	<i>0,10</i>	<i>3,26</i>	<i>1,74</i>
<i>Collaboration within Organization</i>	<i>-0,13</i>	<i>0,10</i>	<i>4,01</i>	<i>0,99</i>

**Table 18: Regression Table Work Dimensions influencing Employee Satisfaction Case Rabobank (explaining 40%)**

### Dimensions of Work and Productivity

Over 30% the perceived productivity is explained by the work dimensions that are presented in Table 19.

Work Dimension	Beta	Sig.	Means	Enhancement opportunities
Empowerment Competence	0,30	0,00	4,07	0,93
Extrinsic Job Motivation	0,23	0,00	3,26	1,74
Empowerment Impact	0,17	0,05	3,27	1,73
Willingness to Change	0,17	0,03	3,59	1,41
Interaction outside Organization	0,15	0,05	3,41	1,59
Collaboration within Organization	0,14	0,10	4,01	0,99
<i>Dynamic Teaming</i>	<i>-0,16</i>	<i>0,02</i>	<i>3,46</i>	<i>1,54</i>
<i>Relationship Colleagues</i>	<i>-0,17</i>	<i>0,05</i>	<i>4,47</i>	<i>0,53</i>
<i>Task Interdependence</i>	<i>-0,22</i>	<i>0,01</i>	<i>4,03</i>	<i>0,97</i>

**Table 19: Regression Table Work Dimensions influencing Productivity Case Rabobank (explaining 32%)**

Like in the cases of Microsoft and De Unie empowerment competence shows the strongest correlation with employee productivity. Moreover, extrinsically motivated employees perceive themselves as being productive. Task interdependency influences, like in the case of Microsoft, employee productivity negatively. The more their work relies on the work of

others, the lesser productive they become. This explains probably also the negative correlations with dynamic teaming and relationships with colleague. The standardized mean scores on all work dimensions are quite high which suggest people think that teams can adequately reorganized to changes, that they positive about their colleagues but that it reversely contributes to productivity.

#### Dimensions of Work and Job Flexibility

Job flexibility is only for 23% explained by the factors that are presented in Table 20. The factors that influence job flexibility relate on the one hand with the empowerment dimensions and on the other hand with workplace aspects. The interpretation of these correlations needs to be treated with some caution.

Work Dimension	Beta	Sig.	Means	Enhancement opportunities
Empowerment Self-determination	0,30	0,00	3,77	1,23
Distraction Workplace	0,21	0,03	2,97	2,03
Control Workplace	0,17	0,05	2,74	2,26
Workplace Mobility	0,12	0,16	2,14	2,86
<i>Inclination work in Open Office</i>	<i>-0,24</i>	<i>0,01</i>	<i>2,96</i>	<i>2,04</i>
<i>Empowerment Competence</i>	<i>-0,28</i>	<i>0,00</i>	<i>4,07</i>	<i>0,93</i>

Table 20: Regression Table Work Dimensions influencing Job Flexibility Case Rabobank (explaining 23%)

#### Dimensions of Work and Innovativeness

Innovativeness is for 40% explained by the factors that are presented in Table 21. The factors that influence innovativeness relate willingness to change, empowerment impact, technology usage, and career encouragement.

Work Dimension	Beta	Sig.	Means	Enhancement opportunities
Willingness to Change	0,43	0,00	3,59	1,41
Empowerment Impact	0,29	0,00	3,27	1,73
Technology usage	0,14	0,04	3,28	1,72
Career Encouragement	0,13	0,04	2,71	2,29

Table 21: Regression Table Work Dimensions influencing Change & Innovativeness Case Rabobank (explaining 40%)

#### Conclusions World of Work Rabobank

Rabobank is a triple A rated international oriented cooperative bank. It is one of the leading companies in the Netherlands with regard to new ways of working. Its cooperative nature provides interesting opportunities to develop and implement new ways of working.

Rabobank's two IT departments show relatively medium scores on most work dimensions but relatively low on "control of workplace", "interaction outside organization", and "task identity".

With regard to perceived individual performance Rabobank scores relatively medium on “employee satisfaction”, “productivity”, and “innovation” but a little lower on “job flexibility”. To improve “job flexibility” “empower self determination” and “distraction workplace”, “control workplace”, and “workplace mobility” might play a positive role. More “inclination work in open office” and “empowerment competence” might have a negative impact on “job flexibility”.

## Chapter 4. Different aspects of Worlds of Work

### 4.1 Introduction

In this chapter we present the results of research on various aspects of Worlds of Work. This research has been conducted by Master Students from the Rotterdam School of Management within the various case companies.

### 4.2 Leveraging the Digital Work Style<sup>12</sup>

#### 4.2.1 Introduction

*“...an organization is best able to grow and succeed when it recognizes that people are its most important asset and empowers them with the right tools and technologies to drive the business forward.”*

Source: Microsoft Corporation

#### *Background*

The competitive landscape continually shifts, in struggling to sustain a dominant position companies are challenged to find approaches for embracing new ways of working. European Union reports on the introduction of new technologies, new processes of information sharing, communication and collaboration, demonstrate our world of work is in a process of transition (Johnston and Noland, 2001; Schaffers et al., 2005) including, continued development of telework<sup>13</sup>, and its benefits of flexibility in time and place. However, we gradually move toward a new phase, which has a broader scope, includes concerns for the quality of work, and anticipates the revolution in work for most people (Johnston and Noland, 2001).

As new wireless and display technologies change office equipment and design, and as the nature of work itself changes, substantial structural change is most urgently needed to boost productivity (Johnston and Noland, 2001). In the last two decades, new ways of working, enabled by information technology, can be related to a significant proportion of the increases we have enjoyed in economic productivity (Sinha and Van der Ven, 2005). In turn, it is argued that information technology (IT) is not simply a tool for automating existing processes, but, more importantly, it is an enabler of new ways of working that can lead to additional productivity gains (Dedrick et al., 2003). The emergence of information and communication

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<sup>12</sup> Vermeulen, V.E. (2007) Leveraging the Digital Work Style “Identifying Uneven Patterns of Adoption among the IT-enabled Workforce, Master Thesis Rotterdam School of Management, Erasmus University Rotterdam

<sup>13</sup> Defined as working outside the conventional workplace and communicating with it by way of telecommunications or computer-based technology (Nilles, 1994; Olson & Primps, 1984; cited by Bailey and Kurland, 2002).

technologies has radically increased, and will continue to increase, the ability of organizations to distribute their work processes (Venkatesh, 1992)”

Alternately, the current study investigates the adoption likelihood of new ways of working enabled by the appropriate integration of information technology within the organizational work setting. With regard to the latter, the study concentrates on investigation of the user adoption of new work styles (i.e. “digital work style <sup>14</sup>”), particularly how individual beliefs and attitudes influence the former.

“help an organization decide what factors will lead to encouraging employees, or specific typologies of employees, and their managers to engage in adopting a digital work style and accepting IT-enabled work behaviour changes”

### *Managerial Objectives*

Anecdotal evidence for the future of work and organizational phenomena related to the predictions of the future of work can easily be found. However, the challenge for work strategists is to support such predictions with more than anecdotal evidence, to shape speculation by creating areas of certainty in our thinking, to identify the decision points that will inevitably be reached, and to weigh the likely outcomes that will emerge from such decisions (Sparrow, 2000). We will tap into this line of thinking by suggesting behavioural directions for employees to actually align their behaviour with the goals of future work design set by an organization upon entering into a phase of organizational change.

*The goal of this research is to determine whether our extended Theory of Planned Behaviour can help an organization decide what factors will lead to encouraging employees, or specific typologies of employees, and their managers to engage in adopting a digital work style and accepting IT-enabled work behaviour changes. After testing our model, we could make recommendations to attempt manipulation of specific factors within certain organizations subsequent to assessing the work context of each.*

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<sup>14</sup> “Digital Work Style”, a term introduced by Microsoft's chairman Bill Gates, which in everyday language is a vision for the future of work. In absence of a comprehensible definition, experts were asked to define the term and came with the following designation: A work style, where workers have and make use of the nearly on-site (office) levels of service and capabilities regardless of location. Integration between data, desktops, and collaboration between users and departments are widespread. Collaboration through Video, Instant Messaging, Document Sharing and other capabilities, which already exist today. Enabling workers in finding and sharing information, working together, creating information, developing insights, taking action, driving business processes, by utilizing extensive digital tools in our day to day work. The workforce that adopted a digital work style is always on and always connected -- using these new tools to work more efficiently and effectively and help people organize and prioritize their work and personal lives. Examples of these tools are: “online video training; collaborative screen sharing (for reducing trips); business information on mobile phones (e-mail); online training (human resource matters);and live sales information.

Furthermore, the present study tries to develop a measure for relating personas<sup>15</sup> to new ways of working within an organization. Personas are employed for the purpose of choosing the right technology and the right training per type of employee. In this manner, full potential for each worker archetype can be reached, by creating a virtual environment in which he or she can be connected anywhere, anytime, to support them in reaching their full potential in a highly collaborative environment.

### *Research Design*

A single-case design is employed to investigate the underlying factors for adoption of a digital work style in a case study representing all layers and functional areas of the organization. For this individual study, data will be collected by means of a survey and interviews under workers and managers involved in the study. The survey will partially focus on factors affecting the adoption processes of a digital work style, i.e. the behavioural intent of respondents to engage in a digital work style, underpinned by methods drawn from the Theory of Planned Behaviour, perception of strategic value, and the acceptance of planned organizational change.

Firstly, the research design is two-pronged. Initially, a single case study is deployed; these results will be tested upon a survey indicating the worker's likeliness to engage in changing behaviour which will be performed *a priori*. Subsequently, the study will incorporate all variables indicated in this study as possible determinants on the adoption of a digital work style in an extensive study in the present research context.

Secondly, the study is designed to research how to create personas according to the behavioural patterns of a specific typology of workers. Its findings and resulting scenarios may serve to give impetus for the coherent development of a strategic design which organizations can deploy to implement the process of adoption and implementation both more effectively and efficiently.

### **4.2.2 Literature Review**

The current section reports on the digital work style as an upcoming way of working and taps into one of the unexplored areas of research regarding a digital work style, which pertains to the study of determinant factors of adoption of this new way of working.

#### *The Digital Work Style*

The digital work style encapsulates a new way of working enabled by information technology, which is often associated with increases in flexibility, also, earlier described as eWork, in European Union reports on new ways of working in the dynamic, digital, knowledge-based economy (Johnston and Noland, 2001; Agarwal, 2000). Where, new facilities, via advanced mobile and handheld devices, are expected to spread across the workforce. This could strongly extend to the potential benefits of this new way of working (e.g. in terms of productivity, work organization, and work/life balance). "Thus, it appears

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<sup>15</sup> "A persona is best described as a user archetype you can use to help guide decisions about product features, navigation, interactions, and even visual design. By designing for the archetype—whose goals, attitudes, and behavior patterns are well understood—you can satisfy the broader group of people represented by that archetype (Cooper, 1999) "

likely that workplace organization has to be changed in order to make workflow more efficient or, to put it differently, that information technology is enabling organizational change, as pointed out by Brynjolfsson and Hitt (2000) (cited by Bertschek and Kaiser, 2003, p. 5)”.

As part of the current research study, a detailed research model was developed which integrates behavioural intention theory with relevant change management issues. To facilitate subsequent exploration of this model, the discussion below is divided into two distinct areas: (1) Review of behavioural models, to identify determinant factors of adoption intention of a digital work style, and (2) Use of archetypes (later on referred to as personas) for the diversity of people argument, and for creating scenarios.

#### *Review of Behavioural Models*

We review the various factors considered in preliminary studies according to the Theory of Planned Behaviour, Theory of Reasoned Action, Technology Acceptance Model, and Diffusion of Innovation Theory. Consequently, we develop a theoretical model by taking into account the factors applicable to the context of digital work style adoption. Table 22 represents the underlying models, underpinning our conceptual framework.

Academic studies have given a great deal of attention to the adoption and consequent implementation of information systems requiring organizations to change. Most of the past studies have used the Innovation Diffusion Theory (Rogers, 1983), the Technology Acceptance Model (Davis, 1989), the Theory of Reasoned Action (Fishbein and Ajzen, 1975), and the Theory of Planned Behaviour (Ajzen, 1991), to identify the attributes of the organization and the innovation, that can be related to the adoption process.

The principal theoretical framework for this research, Ajzen’s (1985, 1991) Theory of Planned Behaviour, has been widely applied across a range of disciplines, including marketing and social sciences, such as for adoption of e-commerce (Grandon and Pearson, 2004), technology adoption (Morris and Venkatesh, 2000), and telemedicine (Chau and Hu, 2001). Other studies investigating the individual decision to adopt teleworking or information technology also used the Theory of Planned Behaviour or Theory of Reasoned Action for assessing whether individuals were likely or not likely to adopt specific information technology, often implying a new way of working (Clark, 1998; Clark and Olfman, 2000; Karahanna et al., 1999; Morris and Venkatesh, 2000, Chau and Hu, 2001). Sequentially, Clark and Olfman (2000) found that the factors mentioned in the Theory of Planned Behaviour are very specific to the individual’s workplace and altering people’s perceptions means changing those perceptions within the context of their work environment. Thus, the Theory of Planned Behaviour is a well-established social psychological model of behaviour that may be usefully employed in this context.

Table 22: Review of behavioural Models

Author(s)	Primary Model	Independent Variables	Dependent Variable
<b>Core Models</b>			
Ajzen (1991)	Theory of Planned Behaviour	Attitude, Subjective Norm, Behavioural Control	Behavioural Intention
Fishbein & Ajzen (1975)	Theory of Reasoned Action	Attitude, Subjective Norm	Behavioural Intention
Davis (1989)	Technology Acceptance Model	Perceived Usefulness, Perceived Ease of Use, Subjective Norm	Technology Adoption
Rogers (1983)	Innovation Diffusion Theory	Relative Advantage, Ease of Use, Result Demonstrability, Triability, Visibility, Image, Compatibility, Voluntariness	Innovation Adoption
<b>Applied Models</b>			
Grandon & Pearson (2004)	Theory of Planned Behaviour	Perceived Ease of Use, Perceived Usefulness, External Pressure, Organizational Readiness, Perceived Strategic Value	E-commerce Adoption
Morris & Venkatesh (2000)	Theory of Planned Behaviour	Attitude, Subjective Norm, Behavioural Control	Technology Adoption
Chau and Hu (2001)	Decomposed Theory of Planned Behaviour	Attitude, Perceived Usefulness, Perceived Ease of Use, Compatibility, Subjective Norm, Behavioural Control,	Telemedicine
Clark (1998)	Theory of Planned Behaviour	Perceived Ease of Use, Perceived Usefulness, Compatibility, Subjective Norm, Behavioural Control	Tele-work intent
Karahanna et al. (1999)	Innovation Diffusion, Theory of Reasoned Action, and Attitude Theories	Perceived Usefulness, Perceived Ease of Use, Result Demonstrability, Visibility, Triability	IT- adoption (pre-adoption attitude)
Iacovou et al. (1995)	EDI Adoption	Perceived Benefits, External Pressure, Organizational Readiness	Electronic Data Interchange Adoption

A quantitative research design was chosen to examine the relationships between the antecedent variables demonstrated by our extended version of the Theory of Planned Behaviour and behavioural intention to adopt a digital work style (See Figure 22). An electronic questionnaire was used to facilitate collection of information from a sample of knowledge workers at Microsoft Nederland.



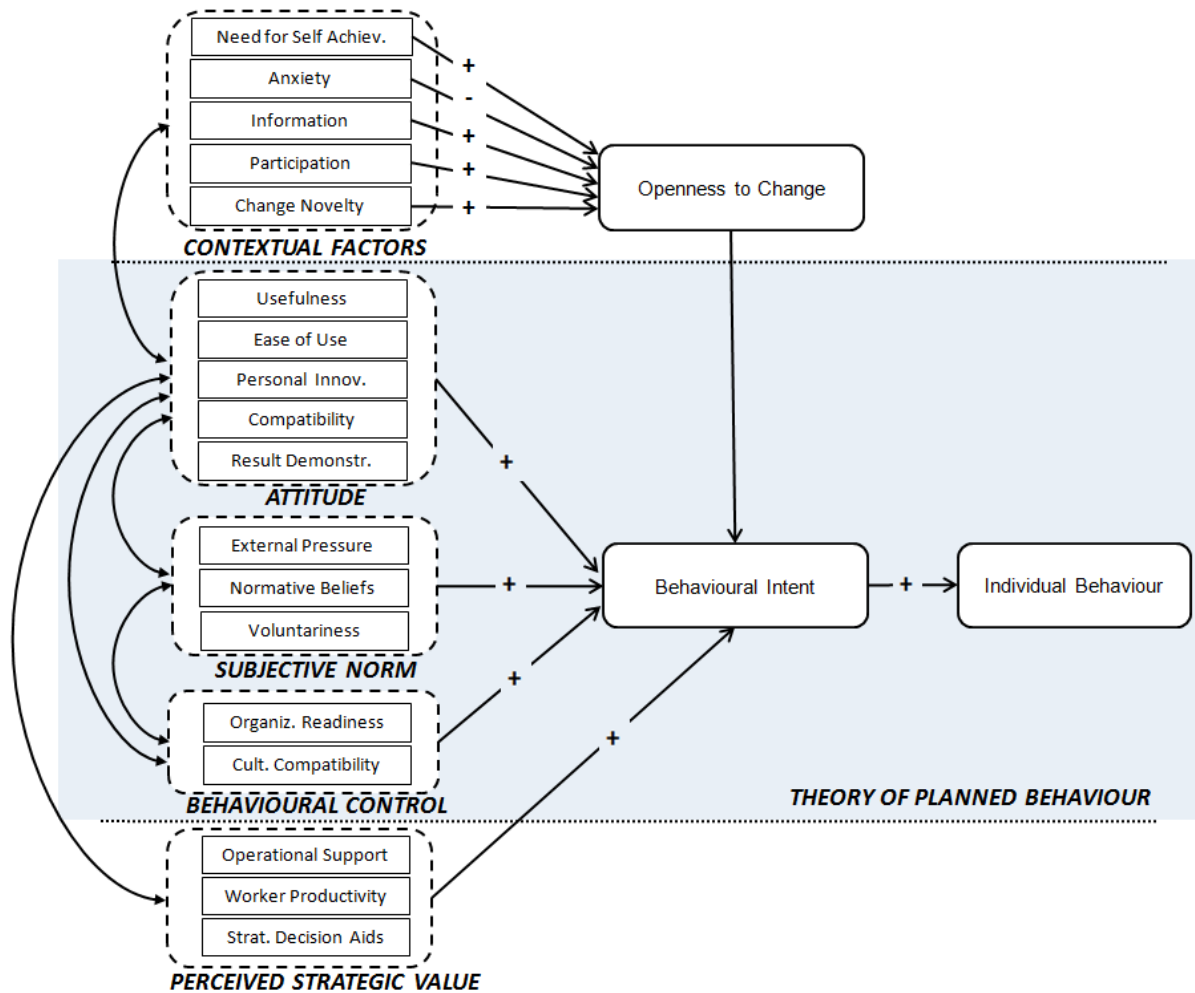


Figure 22: Research Model 'Leveraging the Digital Work Style'

*Diversity of People: Personas*

Verplanken et al. (1998) found that the frequency of past behaviour moderates the relationship between intention and subsequent behaviour. Where the new way of working intends to provide a superior substitute for the conventional way of working within the organization, characterized by self-determined activities of communication, interaction, collaboration, coordination of work, and use of information technology. Thus, past behaviour should moderate the intention-behaviour relationship such that when the behaviour consistent with the new ways of working has already been adopted in one's work largely, a weak intention –behaviour relationship should be observed.

For that reason, the current study relates to the notion of personas, to develop worker archetypes according to the behavioural measures defined above. The cluster analysis executed for this research provides us with a collection of computational models of social archetypes, which view a person in terms of current behaviour along the characteristics of the digital work style, using this information to be able to better predict and intervene for future behaviours.

In this exploratory part of our study, instead of merely focusing on the behavioural beliefs of the knowledge worker, we found it useful to look at work styles—those current patterns of behaviour by which the individual relates himself to the external reality of new ways of working. These behavioural patterns, in turn, are supposed to explain a multiplicity of behaviours in the current study's context. Thus, we focus on clusters of behaviour patterns which can be directly applied to the context of a digital work style. The clusters, or personas, encapsulate a behaviour pattern along the dimensions that characterize the new way of working.

However, for this study, demographic and achievement differences may moderate the links between openness to change and personal beliefs on behavioural intention to adopt a digital work style. The present study allowed us to control for these moderating effects regarding gender, education, household situation, job function, and achievement level differences.

### 4.2.3 Methodology

#### *Sample Description and Procedure*

The quantitative research design was chosen to examine the proposed relationships among the various constructs in the research model. An electronic questionnaire was used to facilitate collection of information from a large sample (n=266). The current section describes the sampling method, construct measures, and analysis methods employed.

Questionnaires were administered at the beginning of an organizational development program designed to address issues of remote work, using information technology more intensively in daily work activities and working collaboratively through information technology. Respondents were assured of data confidentiality.

#### *Instrument Development*

In developing the digital work style adoption questionnaire, the literature was searched for tests or scales that were already developed. To ensure content validity of our survey instrument, we reviewed the extant literature on adoption of behaviour and organizational change, consequently we adopted many of the scales validated in the literature and adapted any of these when needed. The existing items for each of the constructs were then evaluated in terms of their validity by experts in the pre-test phase and for reliability by means of a pilot test. Although the goal was to use existing items (without revising them) wherever possible, this was not always feasible within our context. When the existing items could not be used, existing items were adapted or we developed new items.

### 4.2.4 Results empirical research

In this section the results of the empirical research are presented. We conduct confirmatory factor analyses to ascertain the uni-dimensionality, discriminant, and convergent validity and the reliability of the measurements scales in our study. Consequently, regression analyses were performed to measure the relative influence of the antecedent factors in our conceptual model, and personas were generated that exhibit differences in behavioural patterns.

*Regression analyses*

This section analyses the hypothesized linear relationships between the antecedent factors identified in the context of the current study and the behavioural intention to adopt a digital work style. Pearson correlations were calculated to determine associations between the psychological determinants of intentions. Consistent with the conceptual model, our variables of beliefs all correlated significantly with intentions. Subsequently, to be able to explain unique effects, intentions are regressed onto attitude, subjective norm, behavioural control, strategic value, and openness toward change.

This research found a significant relationship to exist between the favourable or unfavourable reaction, or attitudinal beliefs, toward adopting a digital work style, which was exhibited in the worker's cognitive and emotional responses on the intended behaviour to adopt a digital work style. In addition, a significant influence was evidenced for the perceptions of normative beliefs or social influence on the behavioural intention to adopt a digital work style. The control beliefs taken into account in the current study were fully mediated through the attitudinal beliefs for adopting a digital work style, which suggests similarity with the underlying beliefs of the Theory of Reasoned Action.

We accounted for other variables in this study as an extension on the Theory of Planned Behaviour, where openness and self-efficacy toward change was found as positively influencing the behavioural intention to adopt a digital work style. Additionally, some conceptions of perceived strategic value were found to significantly influence the behavioural intention to adopt a digital work style. Furthermore, the present study proved multidimensionality of all hypothesized antecedent factors for behavioural intention to adopt a digital work style.

From a managerial standpoint, our findings suggest that cultivating positive attitudes toward adopting a digital work style, as well as underlying positive perceptions of usefulness, ease of use, and compatibility with one's job are important for fostering knowledge worker's adoption of a digital work style. Once an organization has decided to implement a new way of working, it would therefore be recommended for management to put strong emphasis on demonstrating and communicating the usefulness, ease of use, and compatibility. Management, in turn, needs to formulate implementation strategies that would increase the likelihood of a knowledge worker to perceive the digital work style compatible with that of his own. The significance of the subjective norm suggests that knowledge workers, in general, attach great value to the opinion and suggestions by relevant others: peers, colleagues, supervisor; who have profound influence in their decision-making. In the current situation the personas, or the diversity of people argument, could add to this finding, in the sense that it is important to determine the adoption likelihood per type of knowledge worker.

*Exploratory Analysis: Cluster analysis to identify Personas*

The survey in the current study contained items addressing work behaviour patterns for creating personas. Before analysing the clusters we group the items based on the underlying

constructs they intent to measure and assess the reliability of the scales. The scales were all based on a seven-point scale, for comparison, and in order to do a cluster analysis. Thus, variables including multiple Likert-type items were also recoded to measure the average on a seven-point Likert scale.

Our first step for performing the cluster analysis was the selection of variables to "carve" the knowledge worker population into subgroups. We used the K-means clustering algorithm, to cluster the personas according to their behavioural patterns. We analyse the number of clusters on the 8 , while the cohesiveness of the clusters changes as the number of clusters goes up, we terminated the analysis when one of the resulting clusters were found to be unreasonable small (below 2,5% of our sample,  $K > 9$ ). This is in accordance with the practical basis for describing homogeneous sets of potential users of the digital work style. This K-means clustering method, for minimizing the total within-cluster variance, is commonly used in information systems and marketing studies (Bapna et al., 2004; cited by Radkevitch et al., 2007) to develop taxonomies of actors.

Earlier scientific studies pointed to different patterns of adoption and use of information technology by standard socio-demographics (Katz et al., 2001; Chen et al., 2002). In contrast, findings of our study indicate that different psychometric measures determine worker's likelihood to adopt a new of way of working. We used cluster analysis to define archetypes of knowledge workers according to their behavioural patterns. In general, our results indicated that workers who believed to have higher levels of usage of information technology, and whose work can be characterized as more mobile in nature, are related to higher levels of behavioural intention to adopt a digital work style. More importantly, these workers demonstrated higher levels of job satisfaction. The latter providing some preliminary evidence of the positive relationship between adoption of a digital work style and higher levels of job satisfaction.

#### *Interpreting the personas*

The following six representations of knowledge workers, in turn, represent the entire population under study. These narratives embody workers with different job descriptions, as long as they all share similar behaviour patterns related to their work styles. Consequently, we labelled the clusters: Jannie, Jos, Kamphuijs, Binsbergen, Strom, and Boesselaere, for communication purposes. Where, Jannie represents the least mobile cluster, and Boesselaere the highest mobile cluster (see Figure 23).

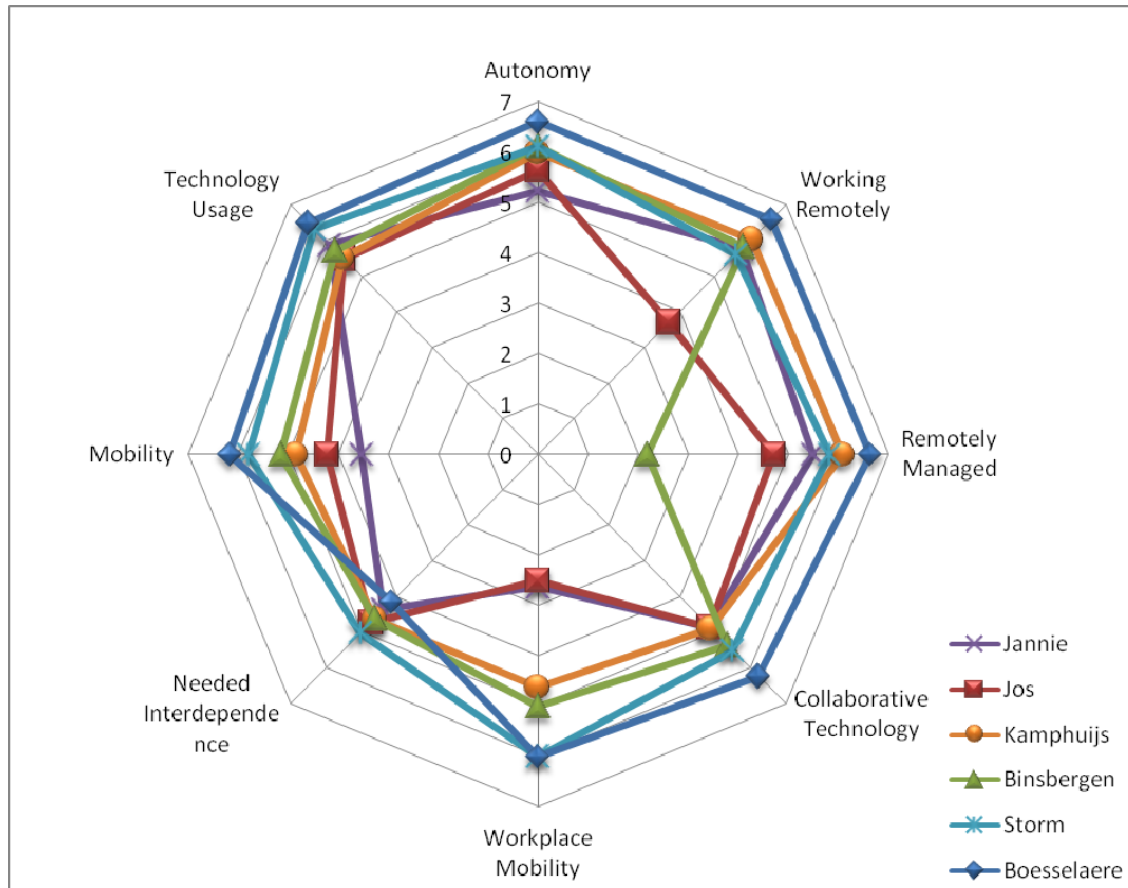


Figure 23: Comparison of means: behaviour measures

### Personas Analysis

This section discusses further analysis of the different personas, and their different behaviours represented by the six clusters. We distinguish archetypes for which the behavioural intent differs, and define personas for which the characteristics conveyed by the corresponding parameter values are unique. The development of archetypal users should direct the design of the digital work style implementation solution by identifying user behaviour and the needs of the future users.

Altogether, we come to the conclusion that the intention to adopt a digital work style for Jos, Jannie and Kamphuijs was considerably low compared to Boesselaere. Binsbergen did not demonstrate significant differences in digital work style adoption compared to the other groups under study. Despite the fact that Kamphuijs and Storm had a significant higher level of behavioural intention compared to Jos. These findings suggest that knowledge workers sharing the same behavioural patterns (i.e. in terms of mobility) share the same intention to adopt a digital work style, except for Binsbergen who did not show any distinction compared to the other groups. Binsbergen, however, represents the smallest group in our population (n=11), for that reason we do not expect any difficulties.

#### 4.2.5 Discussion, Limitations, Implications & Future Research

From a causal perspective, our regression results suggest, as opposed to the ones by Davis (1989), that “ease of use” and “perceived usefulness” are parallel determinants of behavioural intention to adopt a digital work style, rather than positing “ease of use” as an antecedent of “perceived usefulness”. Although the role of “perceived behavioural control” was recognized in the original Theory of Planned Behaviour, the results of the current research indicate that this relationship was not significant on the path hypothesized. Perceived organizational readiness to implement a digital work style and cultural compatibility (through the firm’s work practices, culture and its values) were found to be influential factors. However, this effect was fully mediated by the attitudinal beliefs held by the respondent with respect to adopting a digital work style.

We found support for the findings of Mathieson (1991), who suggests that the Technology Acceptance Model is more robust than other models. The attitudinal and normative beliefs in our study, together exhibit a reasonable fit to the data, and explain a similar amount of the digital work style adoption as the Theory of Planned Behaviour. Moreover, inclusion of all other variables did not result in a large increase in variance explained as well (where the former resulted in 47% ( $R^2=.47$ ) of the variance explained, and the latter in 51%. ( $R^2= .51$ ). The Theory of Reasoned Action, in turn, provided good prediction, while using the fewest variables. However, our model, as such the one of Taylor and Todd (1995), not only tried to predict usage behaviour, but tried to provide a fuller understanding of the adoption behaviour, and more effective guidance to managers, in which Theory of Planned Behaviour distinguishes itself.

For the last objective of this study, we used a persona creation methodology to divide the knowledge workers into different clusters based on different work behaviour scores. Our empirical results indicate that the prevalence of behavioural intention differs significantly across typologies of knowledge workers. In this exploratory part of the current study, knowledge workers who were found to score high on mobility and collaborative working, were related, in general, to higher levels of behavioural intention to adopt a digital work style, and higher levels of job satisfaction in comparison to others. These findings matched our expectations.

The results of this work and the implications outlined for practitioners should be interpreted in light of the study's context and sample. Our results have implications for both practitioners and researchers. For managers, one important implication is the fact that, in the near future, more companies will indisputably feel the need to change the organizational mindset for enabling its knowledge workers in reaching their full potential. This raises the need for a methodological approach to introducing IT-enabled organizational change for altering the way of working within an organization.

### 4.3 A validation Study of House of Quality key performance indicators<sup>16</sup>

#### 4.3.1 Introduction

##### *Background*

The present case study focuses on the Dutch labour union De Unie. Recently, De Unie started its journey to discover new concepts of working. For example; a new building with different features to facilitate new ways of working was built in the year 2003. Within 2006 De Unie started the first online labour union in the Netherlands; “the online union” (De Internetvakbond). Labour unions worldwide have been facing a decline in the number of members for almost twenty years now (Greene 2000, Ward 2002, Heery 2004). Problems on recruitment and retention of members are the primary concern for unions to identify new concepts that adapt to the needs of the changing workforce and rejuvenate the traditional union. Also in the Netherlands unions are challenged with the above described decline in the number of members.

In essence a labour union centres on maintaining the delicate balance in the group-individual member relationship. The latter is shifting as a consequence of two main forces. First, the changing power balance altering the traditional configurations and relations in the market; second, the growth of the internet and other information and communication technologies (ICT). The latter accelerate the velocity of information and business processes and turn the group-individual relationship on its head, due to the emergence of ICT-enabled individualization.

Fortunately, the leadership of De Unie is aware of the significance of the aforementioned forces and the urgent need to develop a new union concept that is more responsive to the members’ contemporary needs. It merely started an online union as an experiment to rejuvenate the organizational concept that would fit to the needs of the “new workforce” and new members. Hence, understanding members’ needs for individualization and reconciling these with the requirements of the group is a precondition to the online union’s success. At present, there is a lack of information regarding members’ identities and motives. Such data is vital to plot an adoption strategy for the online union. Therefore, this research seeks to provide insights about members’ identities and motives in relation to the online union. Moreover, it provides recommendations on how De Unie can improve its processes to align the online union with the conventional organization, which is rooted in the co-located form of conducting work, that the majority of members are familiar and comfortable with.

##### *Objectives*

As a workforce representative organization, De Unie will have to adapt to the changing workforce and design new concepts that support the needs and requirements of her members and from this become a valuable partner in terms of work related support and personal

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<sup>16</sup> Kieboom, F. (2007) A validation Study of House of Quality key performance indicators “The case of De Unie’s Online union”, Master Thesis Rotterdam School of Management, Erasmus University Rotterdam

development. The individualization of the workforce is gathering pace in the context of urbanization. It places a premium on “an individual to preserve his autonomy and individuality in the face of overwhelming social forces, of historical heritage, of external culture, and of the technique of life” (Simmel, 1922).

As the world (and organizations) becomes flat (Friedman, 2004) and the sourcing of human resources increasingly flexible, in nature it is only logical that De Unie abandons centralized thinking and acting in favour of a decentralized model of organization. Within this context, De Unie developed the online union; that is supposed to function as a ‘virtual community’. Some of the main characteristics of a virtual community are: a set of relationships between individual members and the group, represented by De Unie and sub-units within the labour union.

But what happens when an organization migrates from a centralized to a decentralized model of organizational structure and strategic decision-making? How are geographically dispersed members and branch offices of De Unie responding to the concept of the online union? Do stakeholders perceive the online union primarily as a new way of social interaction? Or as a vehicle that corrodes the character of relations that are based on face-to-face encounters and relations which have evolved over time?

*Based on the previous section the goal of this research study is to improve the design of the (already existing) online union, in order to be more effective in its way to serve the needs and requirements of its members. In other words; to get this community working well for De Unie and its members, it will be crucial to get a clear understanding of the expectations and needs of its members.*

By the use and integration of different methods for measuring and managing the quality services, namely SERVQUAL (Parasuraman, 1985), Kano model (Kano, 1984) and Quality Function Deployment (Akao, 1990), this study will provide us a better and deeper understanding of factors influencing the service performance of the online union.

#### *Research Design*

A single case study is employed (Yin, 2003) to investigate the needs and requirements of the members and from these findings redesign the online union. This research started with a literature study followed by preliminary research in terms of qualitative interviews with workers of the online union as well as members of the online union. Based on the literature study and preliminary research, the explored performance drivers and needs of the members will be processed into an extensive questionnaire. A survey will be conducted under the member population of the online union in order to quantify the findings of the literature study and the preliminary research.

The results of the survey will be processed into the House of Quality (Akao, 1990) as “Whats”. In strong collaboration with the management team of the online union, the process requirements to adapt to the needs of the members will be identified and processed into the House of Quality as “How’s”. By adding the strength of the relationship between the “How’s”



and the “What’s” we will be able to determine the importance of each process requirement. By doing so we will be able to make pronouncements on how to improve the online union.

#### 4.3.2 Theoretical Framework

This section will provide a short overview of previous research related to the subjects that will be discussed within this study.

##### *Unions and New Media*

Not only the changing workforce but also the growth of the internet and many different information and communication technologies are challenging the role of traditional representative organizations like labour unions. Greene et al (2000) argue that for their renewal labour unions should use IT options like internet, to organize in a more innovative and potentially more effective way. In particular, the use of the internet in the labour union context is referred to as ‘e-union’, ‘virtual union’, ‘cyber union’ (Ward, 2002). E-unions can include options, such as web sites, e-mail, chat rooms, bulletin boards and online applications and voting mechanisms that attract new and younger members (Ward, 2002).

As mentioned before the online union functions as a virtual community. Ridings et al (2002, p 273) define virtual communities as “groups of people with common interests and practices that communicate regularly and for some duration in an organized way over the Internet through a common location or mechanism”. An e-union or virtual union therefore can be seen as a virtual community; members are often in the same position or at least have the same work-related interests, are geographically dispersed, and have the possibility to communicate in an organized way (online union) with each other and with De Unie.

##### *Service Improvements*

In order to translate customer’s requirements into the development process of new products or services, nowadays different methods exist to control, measure, manage and improve quality in different areas. One method to measure the quality of a service is the SERVQUAL model of Parasuraman et al (1985). Parasuraman et al (1985) stated that the quality of services is an abstract and elusive construct because of the following three unique features of services; intangibility, heterogeneity and inseparability of production and consumption. As objective measures for services are difficult, an appropriate approach for measuring the quality of the firm is to assess customer’s perceptions about the service. The SERVQUAL model determines the quality of a service by measuring customer’s expectations and perceptions on different service attributes. A gap exists when the expectation of a service exceeds the perception of a service. The model consists of 22 items that describe aspect of the following five service dimensions of service quality:

- *Tangibles*: physical facilities, equipment, and the appearance of personnel.
- *Reliability*: ability to perform the promised service accurately and dependably.
- *Responsiveness*: willingness to help customers and to provide prompt services
- *Assurance*: knowledge and courtesy of employees and their ability to convey trust and confidence.
- *Empathy*: caring and individualized attention to customers

Parasuraman et al (1985) tested the SERVQUAL model in different service categories and claim that the model consists of generic dimensions and therefore is applicable for use in a variety of service encounters. Other research studies challenge the dimensionality of the SERVQUAL model. Buttle (1996) stated that the SERVQUAL dimensions are not universal but the number and content of the dimensions depend on the context.

The SERVQUAL model also assumes a linear relationship between customer satisfaction and service performance attributes. Low customer satisfaction therefore would be a result of low attribute performance. According to Tan and Pawitra (2001) this is not necessarily true; in case of satiation or when the attribute is taken for granted, paying more attention to a specific attribute will not always result in higher customer satisfaction. On the other hand, unexpected or delightful attributes can have a great impact on customer's satisfaction.

A model that measures how well different service attributes are able to satisfy the needs of customer, is Kano's model (Kano, 1984). Kano's model classifies the attributes into three categories, according to the level of satisfaction.

1. *Basis needs or must be needs*: These needs reflect to features which must exist before a potential customer will consider a product or service.
2. *Performance needs of one dimensionality*: Customer satisfaction is a linear function of the performance of the product attribute; higher attribute performance will lead to higher customer satisfaction.
3. *Attractive needs or delighters*: Inclusion of these features delight the customer, even if they did not ask for such features. Therefore customer satisfaction increases super-linearly when increasing the product of service attribute performance.

The present study applies the SERVQUAL model to measure the quality of the services offered by the online union. By including Kano's model we are able to identify how well the different service attributes of the online union are satisfying the needs of the members. According to Tan and Pawitra (2001) the SERVQUAL model only identifies gaps between member's expectations and perceptions but does not mention how the explored gaps can be closed in order to improve the performance of the online union. Therefore, based on the concept of Tan and Pawitra (2001), the needs of the members identified by the SERVQUAL model will be integrated into the concept of Quality Function Deployment (Akao, 1990). This is in order to provide information on *how* De Unie can improve the *design* of the online union. Quality Function Deployment (QFD) represents a powerful structured methodology for exploring and steering interaction between different contributors in the product or service development or improvement process (Tidd 2001). This is also the case when designing IT-related products of services, like in this case the online union. Within the theory of QFD there are two dominant models; the four phase model and Akao's Matrix of Matrices Model. This research study will make use of the four phase model of QFD. The Four-Phase model divides a product or service development process into four phases. For each phase a matrix in shape of a house is used.

In order to translate the needs and requirements of the member into the design process, the needs explored by the SERVQUAL model and prioritized by the Kano model will be integrated into the first house of the four phase model; the House of Quality (HOQ). The HOQ is used to depict customer requirements, technical measures, target values, and competitive analysis (Eureka and Ryan, 1994). Therefore the HOQ will be an important instrument in this ongoing process of improvement in order to match the needs and requirements of the members and the design requirements of the online union.

*“By integrating the SERVQUAL model and the Kano model into the House of Quality, we will be able to measure the performance of the online union and sequentially provide direction for improving the existing design, based on the needs of the members”*

As showed in Figure 24 the House of Quality is formed by a number of elements (rooms) on different levels. The left room lists the member’s needs or requirements, the “Whats”. The room below the roof consists of the “Hows”, the technical (design) requirements. Function of the “Hows” is to translate the “Whats” into terms that are measurable. The body of the house presents the correlation between the “Whats” and “Hows”. Through this correlation matrix we are able to analyze the extent to which each “How” affects each “What”.

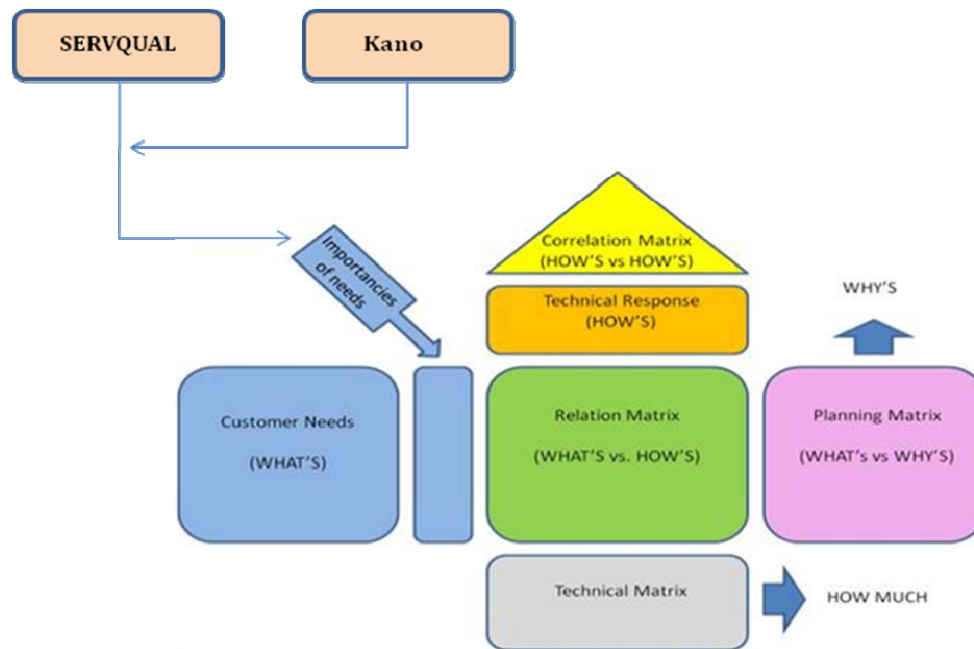


Figure 24: House of Quality

### 4.3.3 Methodology

#### Procedure

As mentioned in previous chapters, the main purpose of this research is to identify expectations and perceptions of the members of the online union about its performance and from this point attend to the process of improvement of the online union. This means that

this research study is not limited merely to the identification and proposition of service performance driver enhancements for the online union. It has to be noticed that in this case improvements ideally are part of the ongoing process ('s Gravendijk, 2007). In order to find empirical evidence for the process of improvement of the online union, we will follow the three steps of measurement and analysis of Quality Function Deployment defined by Griffin and Hauser (1993). The first step is to identify the needs of the members by means of exploratory research. After this the needs of the members will have to be structured in order to set priorities for these needs in the third step. The three steps will be discussed below.

*Phase I exploratory research; defining member's needs*

Several sources will be used in order to identify the specific needs of the members that can be considered as key performance drivers for the online union. One source is the literature research discussed in chapter two. Exploratory research to define the needs will be done by two types of planned in-depth interviews;

- Interviews with Union experts
- Interviews with members of the online union

The interviews with the union experts and the members of the online union will result in a list of items that are assumed to be related to the overall performance of the online union.

*Phase II Quantitative research; online survey*

After exploratory research conducted in phase I, an online survey will be used to quantify the explored items and to test the formulated propositions by advanced statistical techniques. Based on the SERVQUAL and Kano model, the online survey will collect data of member's perceptions and expectations as well as their priorities of the explored items in phase I. Information was gathered from a sample of 120 members of the online union.

*Phase III Establishing the House of Quality*

The data collected from the survey of phase II will be processed into the House of Quality. As mentioned in section 2.5 this technique is used to translate the needs of the members of the online union into appropriate technical requirements. The House of Quality will provide information for De Unie about performance drivers of the online union that are expected and desired by its members.

*Instrument development*

Construction of the survey instrument is based on the SERVQUAL model by Parasuraman et al (1988), that measures the service quality. By exploratory research we will look if the SERVQUAL attributes are appropriate for this specific research. Moreover we are interested to look for new items in relation to the service quality of the online union. After exploratory research, the investigated items will be grouped into dimensions. Each dimension consists of several items. Items will be measured on a five-point Likert scale from strongly disagree to strongly agree. Each item is measured by two questions. The first question measures the overall expectation, whereas the second question measures the respondent's perception about the item in relation to the online union.

#### 4.3.4 Results Empirical Study

In this section the results of the empirical study will be presented. As mentioned in chapter 3, our research is based on three phases. The results of each of these phases will be discussed below starting with the needs of the members explored in phase I. Within phase II, these needs will be quantified and statistically tested by factor analysis and regression analysis. Phase III will present the established House of Quality for the online union.

##### *Phase I Exploratory Research*

In the first phase of the current research, extensive qualitative research was performed to ensure the most important characteristics of an online union, according to the members as well as the employees. Based on the idea of the SERVQUAL model by Parasuraman et al (1988), the explored items are embodied in a model and clustered into five different dimensions (Table 23). Exploratory research showed that from the original SERVQUAL model only the dimension “tangibles” was maintained and four new context specific dimensions were established. The new dimensions are *Interaction*, *Information*, *Solidarity* and *Safety*. Based on the explored items a survey was composed to validate the explored performance drivers through a statistically reliable sample of members of the online union.

**Table 23: Service dimensions online union Phase I**

<b>Information</b>	Up-to-date information Reliability of information Offering relevant information
<b>Interaction</b>	Member involvement on development Interaction between union and members Interaction between members Involvement third parties Recognizing needs of members
<b>Solidarity</b>	Perception of solidarity Opportunity physical meetings Opportunity virtual meetings Members in the same position
<b>Safety</b>	Good representation of interests Sense of safety and involvement Influence of online union Intelligibility objectives and services Offering effective support
<b>Tangibles</b>	Reliability and quality of services Professional presentation Good online facilities Accessibility information Custom-made services

##### *Phase II Quantitative Research*

A factor analysis was conducted to test the structure of the five dimensions established after exploratory research in phase I. Factor analysis indicated four dimensions instead of five dimensions. The dimensions *interaction* and *solidarity* were fused into one single dimension. The four dimensions showed out to be reliable by high Cronbach’s alpha’s (>0.7) and strongly correlate to each other. Therefore we decided to adopt the dimensions constructed by Factor analysis as presented in Table 24.

Table 24: Dimensional structure after Factor Analysis

<b>Interaction</b>	Member involvement on development Interaction between union and members Interaction between members Involvement third parties Perception of solidarity Opportunity of physical meetings Opportunity of virtual meetings Members in the same position
<b>Safety</b>	Good representation of interests Perception of safety and protection Influence of online union Intelligibility objectives and services Offering effective support Reliability and quality of services
<b>Tangibles</b>	Professional presentation Good online facilities Accessibility of information Custom-made services
<b>Information</b>	Up-to-date information Reliability of information Offering relevant information Recognizing the needs of members

A regression analysis was conducted to test for causal relationships between the explored dimensions (independent variables) on the overall performance (dependent variable) of the online union. Regression analysis indicated a significant causal relationship between the independent variable *tangibles* and the dependent variable *overall performance* ( $t=2,248$ ,  $p<.05$ ). Although the other independent variables showed out to influence the overall performance positively, these relationships are not significant. Based on the adjusted R2, our model explains 24,3% of the variation of the overall performance of the online union which is in this case acceptable.

From the statistical analysis of the survey data we can conclude that the overall performance of the online union is most influenced by the dimension *tangibles*. Items within this dimension are the online facilities, custom made services, good presentation and the availability and accessibility of information.

### *Phase III House of Quality*

The House of Quality was established to provide De Unie direction to the improvement of the online union. Within the online survey, members' priorities for the several performance items was measured by the Kano model. Data from the Kano model could directly be integrated into the House of Quality. From the presented HOQ in Figure 25 we can conclude that the technical requirement "Digitalization" will be the most important in the ongoing process of improvement and enables the online union to meet the widest collection of member's needs. Although the online union already is an organization that functions in a digital way, digitalization will certainly help to improve services and offers important opportunities to adapt to the needs of the members. For example; digitalization makes it possible to increase the involvement of members by providing new methods of interaction

like forums, personalized mails, and polls. Digitalization enables De Unie to offer relevant information in a digital way which increases the speed to offer up to date information. According to Figure 25, involvement of third parties is also of high importance to the members. Digitalization is able to integrate and connect different parties in the network of the online union in a fast and relative uncomplicated way.

The House of Quality directly links the technical requirements to the needs of the members and therefore can be considered to be one of the most untainted instruments for improvement (Akao, 1990). For this research study, considerations and correlations addressed to the HOQ are made by the management team of the online union and the writer of this study. It has to be mentioned that the value of the HOQ depends on the expertise of the design team. In this case team members had different expertise's which made it possible to interpret the HOQ from different perspectives.

House of Quality for the online union.		Importance	Kano Category	Adjusted Importance	Relative Importance "Whats"	Technical Requirements												
						Contact availability	Employee availability	Knowledge	Frequency of contact moments	Speed of services	Frequency of information up-dates	Feedback processing	Member database	Personalization of services	Automation of services	Digitalization	Networking availability	
Interactive	Member involvement on development	-0.77	O	1.54	7.07%	S	W		S				S	S	M	S	S	
	Interaction between union and members	-0.66	O	1.32	6.06%	S	S	M	S	M	M	S	S	S	S	S	S	
	Interaction between members	-0.55	I	0.28	1.28%			M		M			S		S	S	S	
	Involvement third parties	-0.49	A	1.96	9.00%	S		M	M	M		W		S	M	M	S	
	Perception of solidarity	-0.9	M	0.90	4.13%	S	M			S		M	M	S		M	S	
	Opportunity of physical meetings	-0.84	I	0.42	1.98%				S	W							M	W
	Opportunity of virtual meetings	-0.52	I	0.26	1.19%			M	S	W					S	S	S	S
Safety	Members in the same position	-0.32	I	0.16	0.73%			S					S	S	M	S	S	
	Good representation of interests	-1.04	M	1.04	4.77%	S	S	S	S		S	S	S	S	M	S	S	
	Perception of safety and protection	-0.6	O	1.20	5.51%	S	S	S	S		S	S		M		M	S	
	Influence of online union	-1.43	M	1.43	6.56%		S	S	M						M	M		
	Intelligibility objectives and services	-1.01	M	1.01	4.64%	M		S	M	M	M					S	S	
	Offering effective support	-1.07	M	1.07	4.91%	S	S	S	S	S	M	S	S	S	S	S	S	
Tangibles	Reliability and quality of services	-0.62	M	0.62	2.85%	W	S	S	M	S	S	S	S		M	M	M	
	Professional presentation	-0.72	M	1.44	6.61%		S		S	S	S				S	S		
	Good online facilities	-0.63	O	1.26	5.78%	S				M	S			M		S	S	
	Accessibility of information	-0.72	M	0.72	3.30%	M	M	W		S	S			S	S	S	M	
Information	Custom-made services	-0.22	A	0.88	4.04%	S	M	S	S		W	M	S	S	M	S	M	
	Up-to-date information	-0.91	M	0.91	4.18%			S	S	S	S		M		S	S	M	
	Reliability of information	-0.75	M	0.75	3.44%		M	S	M	S	S	W						
	Offering relevant information	-0.95	O	1.90	8.71%	M	M	S	S		S	M	S	S	S	S	M	
	Recognizing the needs of members	-0.72	M	0.72	3.30%	S	S	M	S		S	S	S	S	S	S		
Relative importance 'Hows'				21.8	100%	9.1%	7.43%	8.78%	11.11%	5.77%	6.77%	6.50%	7.31%	8.02%	8.35%	11.19%	9.62%	100%
Importance ranking 'Hows'						4	8	5	2	12	10	11	9	7	6	1	3	12

Figure 25: House of Quality for the online Union

### 4.3.5 Conclusions, Implications and Recommendations

#### Discussion

A validation study, i.e., an analysis of a statistically reliable sample of respondents is applied in the present case to identify the key indicators that impact the performance of the online union. By exploratory research in phase I we identified five dimension that were considered to determine the overall performance namely; *interaction, solidarity, safety, tangibles* and

information. Based on the SERVQUAL model (Parasuraman et al, 1985) we explored four new attributes by exploratory research that fit with the context of the online union. From the original model merely the attribute *tangibles* was maintained although the items were modified into topic related items. Factor analysis merged the dimensions *interaction* and *solidarity* into one dimension. Both dimensions consist of items that are associated to each other. Statistical analysis provided significant evidence that the dimension *tangibles* will positively influence the overall performance of the online union. Although the other dimensions all positively influence the overall performance, multiple regression analysis did not show significant relationships. The four dimensions; *tangibles*, *interaction/solidarity*, *safety and information* merely explain 24, 3% of the variation in the overall performance of the online union.

The House of Quality directly links the technical requirements to the needs of the members and therefore can be considered to be one of the most untainted instruments for improvement (Akao, 1990). Two types of data were integrated in the House of Quality. First of all the gaps between the expectations and perceptions of the online union measured by the method of the SERVQUAL model; and, secondly, the Kano category to indicate the influence of each item on member's satisfaction.

Bases on the HOQ presented in Figure 24 we can conclude that for one, "Digitalization" is observed as the most important in the ongoing process of improvement and enables the online union to meet the widest collection of member's needs. Subsequently, translate such needs into desirable and valuable services to generate and maintain a cash flow on which De Unie depends for its growth and survival. Although the online union already is an organization that functions online, the concept of digitalization should be understood as a continuous process of versioning information. Shapiro and Varian (1999) refer to 'versioning' as a technique to lever 'value-based pricing, i.e., to sell the online union's services to different members at different prices will certainly help to improve services of and offers opportunities to meet the most important member requirements. Value-based pricing of services affords the development and exploitation of two-way communication with members and stakeholders. Such online approach affords De Unie the opportunity to obtain valuable market data without expensive and time-consuming marketing studies. Simply, by offering members and third parties a menu of services and monitor which one they choose. For instance, De Unie can offer a product line with one product offered at members and another one at 'outsiders' and observe sales figures to observe purchase patterns in both markets evolving. Shapiro and Varian (1999:54) refer to this technique as 'versioning'. Digitalization in this case enforces the opportunity to connect different parties in the network of the online union. Therefore it enables interaction between De Unie and her members, mutual between members but it can also enforce the integration of third parties. From this perspective it increases the value of the online union, not only for her members but as well as for the organization De Unie.

#### *Methodological value*

By integrating the SERVQUAL model and the Kano model into the House of Quality, a strong instrument was developed to measure the performance of the online union and to provide



direction for improvement sequentially to create a design that adapts to the needs of the members. Quality function deployment originally was developed for product design but nowadays becomes also important for the design process of services. By integration of the SERVQUAL and Kano model we complemented the method of quality function deployment especially for the design of online services.

#### 4.4 Workplace Technologies and enterprise architecture & performance of organizations<sup>17</sup>

##### 4.4.1 Introduction

This study examines workplace technologies and enterprise architecture and their impact on the performance of service-oriented organizations. Over the last couple of centuries, the nature of work has changed. Where the economy used to be dominated by agriculture, a shift took place towards a manufacturing economy and the last thirty years the service-based economy became dominant. A service-based economy does not thrive on goods; value is created with information and knowledge (Rasmus, 2005). The knowledge workers are rapidly becoming the single largest group in the workforce of every developed country (Ramirez & Nembhard, 2004). The number of knowledge workers is growing, and increasing their productivity is the challenge for the management of the 21st century (Drucker, 1999). In response to this, organizations find themselves in a need for change. Several organizations try to implement advanced workplace technologies. Other organizations focus on the IT infrastructure that needs to be in place to let work the workplace technologies effectively. The enterprise architecture literature provides empirical evidence that the enterprise architecture is a critical factor in achieving levels of organizational performance (see for example Ross et al., 2006). From observations and interviews it becomes clear that IT is viewed as an enabler for the changes in work style. For IT to work effectively an IT infrastructure needs to be available that fits the needs of the organization. A core element of the IT infrastructure is the enterprise architecture e.g. is the organizing logic for core business processes and IT infrastructure. Artmann (2007) puts forward that “*the enterprise architecture is about creating support for more efficient ways of working and improving operational efficiency, and it is an enabler for new business opportunities with the help of IT*”. In this study we will investigate in great detail if there is support and how the enterprise architecture support new ways of working.

The main research question in this study is: what is the impact of advanced workplace technologies and enterprise architecture on organizational performance? The objective of this study is twofold. Firstly, the literature of workplace technologies and IT enterprise architectures will be explored. We will try to bridge the gap between these two streams of research by developing a coherent framework that is useful for explorative research. Secondly, to validate propositions in empirical research about the relationship between

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<sup>17</sup> Engels, R. (2007) Workplace Technologies, Enterprise Architecture and Dimensions of Work: Empirical research at Rabobank Nederland, Master Thesis Rotterdam School of Management, Erasmus University Rotterdam

workplace technologies, enterprise architecture, and organizational performance based on explorative case studies.

This section is organized as follows. In section 4.4.2 literature and the main propositions are discussed. Section 4.4.3 presents the case study design, the choice of the three cases and some background of the cases, and the measurement of the main constructs. Section 4.4.4 presents and discusses the empirical results. Section 4.4.5 concludes and discusses the limitations of the current research and the next step in this research project.

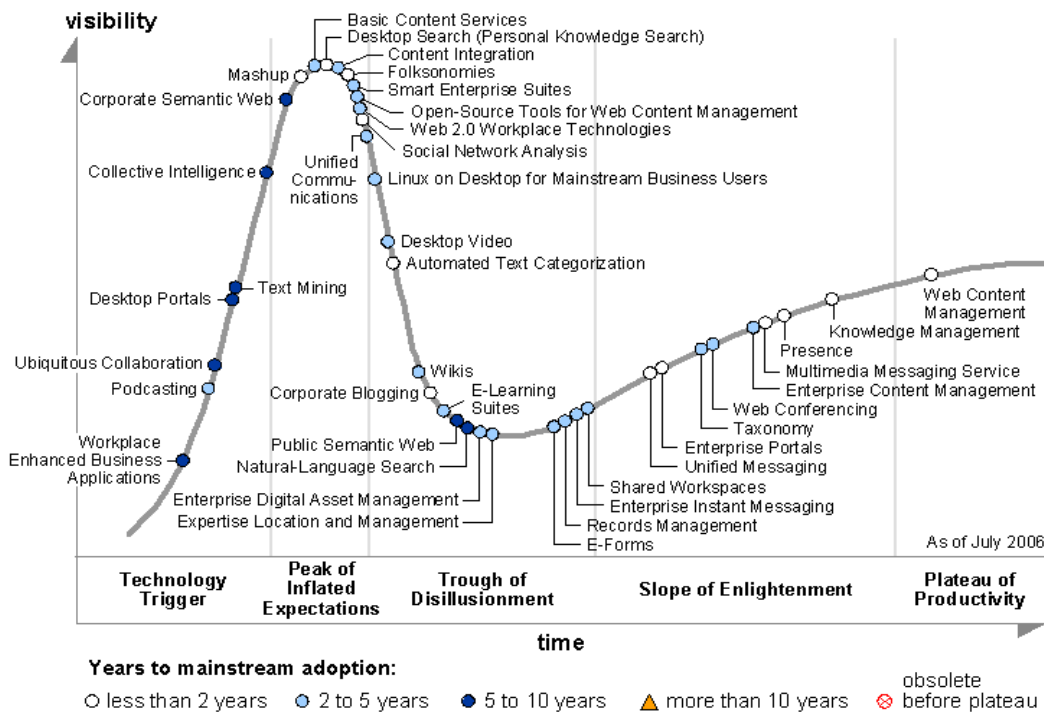
#### 4.4.2 Literature and propositions

##### *Organizational Performance*

The effects of HRM practices on organizational performance have been studied often. Wright et al (2005) identified 68 empirical studies addressing this subject, with in every study at least one significant relation between HRM practices and performance. They observed a high reliance on “post-predictive” research design, whereby the current Human Resource practices are compared against the past performance (the performance up till the point of the response) or the previous year’s performance metrics. Often financial performance metrics were used in these studies. In addition to financial performance measures Kaplan and Norton (1996) opt three other perspectives to translate the vision and strategy of an organization to firm performance measures; internal business process, customer and ‘learning and growth’ for which the balanced scorecard can be used. The balanced scorecard was introduced to assess the ability of an organization to exploit intangible assets, since this has become vital for companies in the information age. First the objectives of each perspective need to be set, following measures for the objectives need to be established, subsequent targets need to be formulated followed by initiatives to reach them. In line with the view of the balanced scorecard an organizational performance measure is required for this study that measures the goals of a change in work design. Improving customer satisfaction, enhancing the image of the organization and increasing organizational agility (to be able to respond to changing customer demands quickly) were often mentioned in interviews with managers about new work designs. The perceived organizational performance measure from Delaney and Huselid (1996) appears a good fit by measures of quality of services, development of new services, attractiveness of an organization to employees, satisfaction of customers, internal relations and perceived market performance. However it lacks measures on agility. The increasing turbulence in the environments, due to factors such as increasing customer demands, technological advancements and regulatory changes, requires agile organizations. The enterprise agility of organizations becomes ever more an important determinant of firm success. It determines “the ability of firms to sense environmental change and respond readily” (Overby et al, 2006, p 120). The organizational performance measure should thus be enhanced with a measure for enterprise agility. To assess enterprise agility Overby et al suggest adapting items from existing measurement scales on market orientation or strategic flexibility as a starting point to measure enterprise agility. Strategic flexibility is “a capability that enables a firm to respond to and generate environmental change” (Saini & Johnson, 2005, p. 362).

*Workplace Technologies*

High performance workplaces centre on IT strategies that enable business transformation and create competitive advantage (Austin, 2007: p. 2). In a high performance workplace people are facilitated to work as effective as possible in supporting business goals providing value. “An HPW is a physical or virtual environment designed to make workers as effective as possible in supporting business goals and providing value. It’s the result of enterprises continually balancing investments in people, processes, physical environments and technology to measurably enhance workers’ ability to learn, discover, innovate, team and lead, and to achieve efficiency as well as financial benefits” (Knox et al., 2006: p. 3). “Many firms have reorganized their work sites from the old Fordist model of work to new high-performance work systems that decentralize decision making within a firm”, (Black & Lynch, 2001, p. 434) by adopting Total Quality Management systems or an employee involvement program. However it is not just about adopting work practices, the highest productivity is associated with how it is actually implemented in the organization (Black & Lynch, 2001). In the hype cycle for high-performance workplace in Figure 26 several technologies are identified that support the high performance workplace).



**Figure 26: The 2006 Hype Cycle for High-Performance Workplace [Source: Knox et al. (2006) Hype Cycle for High-Performance Workplace, 2006]**

Some of these will have a low impact on organizations, a modest cost-reduction for example by implementing Linux on the desktop for instance. Other technologies will have a profound

impact on organizations for instance ubiquitous collaboration that enables collaboration with anyone, at any place, at any time. Many of these technologies are similar to what is called 'mashups' that is a variety of technologies synthesized into new and immediately useful technologies (Knox et al., 2006). Since high performance workplace technologies are aimed at increasing the performance of organizations, the following proposition is drafted:

*P1: Utilizing more high performance workplace technologies results in higher organizational performance, market performance, and strategic flexibility.*

#### *Enterprise Architecture*

Since the early nineties, aligning business (strategies) with information technology (strategies) to increase organizational performance has received a lot of attention in the literature (Luftman et al, 1993; Bharadwaj, 2000; Mata et al, 1995). A guide for aligning the business processes with the IT infrastructure is the enterprise architecture. Ross, Weill and Robertson (2006) have been studying enterprise architecture for eleven years. They define the enterprise architecture as "the organizing logic for core business processes and IT infrastructure reflecting the standardization and integration of a company's operating model" (Ross et al.,2006:47). In their eleven years of research, leaning on experience of over 450 companies of which 150 specifically for this study, they discovered that top performing firms have a specific strategy for success. They define how they will do business (operating model) and design the processes and infrastructure critical to their current and future operations (enterprise architecture), this will then be used as a guide for establishing their foundation of execution, which is the IT infrastructure and digitized business processes automating the company's core capabilities (Ross et al, 2006). In other words, the foundation of execution becomes a strategic asset that enables strategic initiatives, instead of an IT architecture which aligns to (changing) strategies. This foundation will then be constantly improved and used to seize new business opportunities, examples of such top-performing companies are Dell and ING DIRECT. However, only 5 percent of the firms or less manage to do this well. Ross et al describe three stages to establish the right architecture, which will improve business performance.

The first step in building a solid foundation for execution is defining the operating model, which is the necessary level of business process integration and standardization for delivering goods and services to customers. It describes how a company wants to thrive and grow (Ross et al, 2006:25). Instead of a business strategy, which can easily alter in respond to changes in the market or changing competition, an operating model is more stable. The four general types of operating models are; Diversification, Coordination, Replication and Unification. Each of these operating models has their opportunities and shortcomings. There is no optimal model to which all organizations should strive. The most favourable operating model is the one that fits the organization best.

The second step entails implementing the operating model via enterprise architecture. This implies that an organization should identify the processes, data, technologies, and customer interfaces that take the operating model from vision to reality. The enterprise architecture consists at least of four common elements; the core business processes, shared data driving

core processes, key linking and automation technologies and key customers. The enterprise architecture differs for each of the four operating models.

The third stage involves assessing the enterprise architecture maturity, which deals with the systems that integrate and support the business. Ross, Weill, and Robertson (2006) identify five maturity stages; Business Silos, Standardized Technology, Optimized Core, Business Modularity and Dynamic Venturing. Ross et al. (2006) have found only one organization representing phase five, thus they excluded it from in-depth research. Each stage of enterprise architecture maturity has its own characteristics as presented in Table 25.

**Table 25: Learning requirements of the architecture stages [Source: Ross, Weill, and Robertson (2006)]**

	<b>Business Silos</b>	<b>Standardized Technology</b>	<b>Optimized Core</b>	<b>Business Modularity</b>
<b>IT capability</b>	Local IT applications	Shared technical platforms	Companywide standardized processes or data	Plug-and-play business process modules
<b>Business objectives</b>	ROI of local business initiatives	Reduced IT costs	Cost and quality of business operations	Speed to market; strategic agility
<b>Funding priorities</b>	Individual applications	Shared infrastructure services	Enterprise applications	Reusable business process components
<b>Key management capability</b>	Technology-enabled change management	Design and update of standards; funding shared services	Core enterprise process definition and measurement	Management of reusable business processes
<b>Who defines applications</b>	Local business leaders	IT and business unit leaders	Senior management and process leaders	IT, business, and industry leaders
<b>Key IT governance issues</b>	Measuring and communicating value	Establishing local/regional/global responsibilities	Aligning project priorities with architecture objectives	Defining, sourcing, and funding business modules
<b>Strategic implications</b>	Local/functional optimization	IT efficiency	Business operational efficiency	Strategic agility

Each phase is different for example by its strategic implications. In the first phase ‘business objective’ organization strive for local / functional optimization. In the second phase ‘Standardized Technology’ IT efficiency becomes very important. In the third phase ‘Optimized Core’, the strategic focus is on business operational efficiency. The focus of

organizations in the fourth phase 'Business Modularity' is on strategic agility. Being 'agile' is commonly referred to as being able to adapt to and perform well in rapidly changing environments (Dove, 2001; Weill et al, 2002a; Sambamurthy et al, 2003). Strategic agility is "a broad concept encompassing the family of business initiatives an enterprise can readily implement. Many elements contribute to an enterprise's strategic agility including: customer base, brand, core competences, employee's ability to change, and infrastructures" (Weill et al, 2002b, p 10).

Ross (2003) described the four stages of the enterprise IT architecture and used this as a guideline to determine the enterprise IT architecture maturity of the forty case sites she studied. From this classification it appeared that 75 percent of the researched firms are in the first two phases and none in the fourth phase. In 2005, over 80 percent of the organizations were in the second and third phase and only five percent in the fourth phase. Ross et al (2006) emphasize maturing through the phases since it will improve organizational performance, especially the fourth phase leads to a variety of benefits for the organization; improved IT responsiveness, risk management, managerial satisfaction and strategic business impact. Enhancing the strategic business impact causes the operational excellence, customer intimacy, product leadership and strategic agility to improve. Maturing the architecture also leads to a change in organizational flexibility. In the first phase (Business silos), the local flexibility is high and the global flexibility is low, whereas in the fourth phase (Business modularity) the local flexibility is mediocre but the global flexibility is high. This last phase enables the organization to be flexible and at the same time keep costs low. However, to profit fully from the enterprise architecture, organizations need to rethink how their business will be conducted. First the operating model should be known, after which the facilitating enterprise architecture can be designed, in order to align the IT with the business.

To reap the benefits of maturing the enterprise architecture it must be accompanied by organizational learning, just maturing the enterprise architecture without changing the business does not increase organizational performance. The importance of organizational learning within the former context is supported by research from Tippins and Sohi (2003).

The last discipline for creating the foundation of execution is developing the IT engagement model. The IT engagement model is the system of governance mechanisms assuring that business and IT projects achieve both local and company-wide objectives (Ross et al, 2006, p 119). To generate the expected benefits of a foundation for execution results not just from changing IT investment patterns, but also from new management practices. The new management practices formalize organizational learning on how to leverage IT capabilities and adopt business process changes. Each enterprise architecture stage demands different management practices for acquiring optimum benefits. Some management practices are important in the early stages, whereas other management practices are less important or occasionally even unnecessary until later architecture stages. Ross et al. (2006) reviewed the largest value, as reported by 103 CIOs, of management practices related to architecture maturity. From this review it appears that for companies in stage 1, it is imperative to perform business cases and a standardized project methodology well, before they attempt to move to

stage 2 (Standardized Technology). The management practices critical for the standardized technology stage articulate companywide needs instead of business unit needs in stage 1, illustrated in centralized funding of enterprise applications and formal architecture compliance process. The key management practices of the third ‘optimized core’ stage demonstrate the importance of senior management involvement in defining what business processes should be integrated and standardized in the foundation and ensuring the enhancement and usage of it. The essential management practices of the fourth ‘business modularity’ stage exemplify the organizational learning practices of the role of IT in enabling the business. Imperative for this phase, since some IT might hinder enterprise agility by “limiting information visibility by storing data in ways that make it difficult to retrieve and interpret” or “by being incompatible with systems adopted by customers and suppliers” (Overby et al., 2006, p. 127). All in all, top performing organizations perceive great senior management involvement in enterprise architecture issues, great effort to build architecture into project methodology and mature enterprise architecture as the most important management practices for reaping the benefits of the business modularity stage. Ultimately, people make the difference, they design the operating model, innovate and execute, they do this at their best if the right direction, leadership and incentives are in place. The literature review on enterprise architecture led to the following proposition:

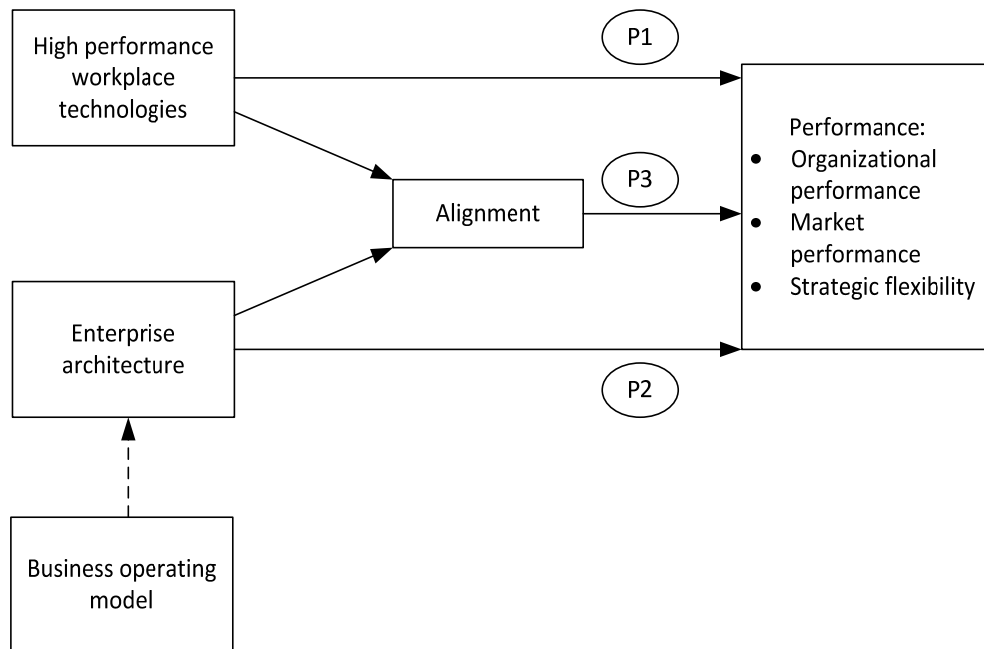
*P2: A higher maturity level of the enterprise architecture results in higher organizational performance, market performance, and strategic flexibility.*

#### *Alignment of Workplace Technologies and Enterprise Architecture*

Enterprises have been going through tremendous transformation in their ways of working to respond to the more global, fragile, and uncertain business environment. Accordingly enterprise management practices have been transformed respective to the new work design. Moreover the rapid growth of Information and Communications Technologies (ICT) enable and, simultaneously, force organizations to integrate their information system completely to facilitate the sharing of data and information throughout its distributed network. Integrated information systems are necessary to aid decision makers to manage enterprise resources dynamically, more efficiently and more effectively. “The need for an integrated view applies equally well to the tools that ‘automate’ the business, i.e., to the variety of widely used methodologies and tools that run and execute an operational model of the enterprise” (Ashuri et al, 2007, p. 39). According to this integrated view, the high performance workplace technologies (tools) should align the enterprise architecture (methodologies). Especially since each phase of enterprise architecture maturity exemplifies a different vision on IT strategy which can be best support by different high performance workplace technologies. Since an integrated view leads to more efficiency and effectiveness, alignment with high performance workplace technologies and the enterprise architecture should result in higher performance for an organization as well.

*P3: A closer alignment between high performance workplace technologies and the enterprise architecture results in higher organizational performance, market performance, and strategic flexibility.*

The three propositions are the basis of the conceptual model that is presented in Figure 27.



**Figure 27: Conceptual Model**

#### 4.4.3 Research Method and data

##### *Case Study Design*

In this article an exploratory study is performed. A case study approach is chosen for the in depth analysis in why three organizations have chosen to work with workplace technologies and a different way of working (Yin, 2003). Furthermore, this paper attempts to provide insight in what distinguishes the ways of working of the three cases from other organizations and how these ways of working relate to organizational performance. Due to the novelty of the ways of working a qualitative study is performed, which is one of the main reasons to do so (Creswell, 1994). The case study follows a common structure, starting with a within-case analysis, a detailed description of the cases, followed by a cross-case analysis and is finalized with “lessons learned” from the cases. We examine the organizational performance, the (potential) use of high performance workplace technologies, the enterprise architecture maturity, and the alignment of enterprise architecture with the high performance workplace technologies. Such an extensive analysis is chosen to provide insight into how the change of work design has affected the organization.

##### *Data Collection*

In this paper three case organizations will be analyzed, two of these have adopted a (at that time revolutionary) way of working and one organization is in the process of adopting a new way of working. The first case is an insurance company labelled InSure. The company names are fictitious names due to the fact that the companies asked to present the case results in an anonymous way. This insurance firm is one of the early adopters of workplace technologies in the Netherlands. The second case is a regional Chamber of Commerce labelled CommerCe in



one of the regions of the Netherlands. Both organizations rearranged their way of working radically (for them as well as other organizations), illustrated by the number of visitors they received - just after the new offices were opened both organizations received a lot of attention. InSure gave tours for 50,000 people on a yearly basis and CommerCe tours were given twice a day - so they provide excellent research material. The third case is the global financial institution Rabobank that is labelled BanCo.

#### *Construct Measurement*

The cases will be analysed in depth involving multiple sources of information, including observations, interviews, documents and reports as recommended by Cresswell (1998). The data on the organisational background have been collected from books about the organizations, company documentation and a research on the work design of one of the cases combined with interviews, which were guided by a list of the questions.

Data on organizational performance, high performance workplace technologies, and enterprise architecture was collected by structured interviews with employees of the case organizations. Three key people (HR consultant, Project Manager, Senior Associate) at InSure, the Managing Director at CommerCe, and ten people (Programme Managers, IT Architect, Member of the Board of Directors) were interviewed at BanCo. In total 14 interviews were executed in the period March – November 2007. Each interview took between one and two hours.

#### *Organizational performance*

The organizational performance will be measured with the structured questions combined with the information resulting from the case description, see Appendix A. Considering the nature of the case companies (profit and non-profit), a deliberate choice was made to use the measure of perceived organizational performance of Delaney and Huselid (1996) instead of (objective) financial measures from Huselid (1995) for instance, since objective firm performance data of the non-profit organization is unavailable. Using perceived organizational performance does introduce limitations, such as increased measurement error and possibly mono-method bias, however research showed that perceived organizational performance is positively (moderate to strong) correlated with objective measures of firm performance (Dollinger & Goldon, 1992; Powell, 1992).

The first variable was constructed from seven items assessing respondents' perceptions of their firm's performance over the past three years relative to that of similar organizations (perceived organizational performance, Alpha = .85). The second dependent variable is constructed from four items concerning respondents' perceptions of their firm's performance over the past three years relative to product market competitors and thus only applicable to profit-making organizations (perceived market performance, Alpha = .86). Each of the dependent variables is based on questionnaire items answered on Likert scales ranging from 1, "worse" to 4, "much better".

The measure of perceived organizational performance is enhanced with a measure for strategic flexibility, "a capability that enables a firm to respond to and generate

environmental change” (Saini & Johnson, 2005; p. 362). This capability is important for organizations especially in uncertain markets. The data on organizational performance of InSure comprises of the average of the response of a HR consultant and a project manager. The data on organizational performance was collected from the work design program manager of Banco.

#### *High Performance Workplace Technologies*

The utilization of high performance workplace technologies will be analysed by means of a structured interview, see for a list of workplace technologies Appendix B. Herein the quantity of high performance workplace technologies the organization utilizes is examined. Respondents were asked to mark the high performance workplace technologies used in the organization based on a description of each. A project manager and senior associate portfolio controller were interviewed for InSure. An IT project manager and a project manager from BanCo were interviewed on this subject.

#### *Enterprise Architecture*

The enterprise architecture maturity will be assessed by the questions concerning the management practices in the various case organizations (Appendix C and D), combined with the description of the organization resulting from the case description. For the BanCo case the data came from a project manager and an IT architect and for InSure the data was collected from the project manager. In general, the more management practices are used in the organization, the more mature the enterprise architecture of the organization is. Eventually each case organization will be classified in one of the four enterprise architecture maturity levels. The use of high performance workplace technologies and the perceived organizational performance can be easily evaluated based on the structured interviews held. During the first ‘try-out’ interview it became apparent that defining the enterprise architecture maturity required further analysis on top of the questions from the structured interview. Therefore a few open questions were added to create better insight in the enterprise architecture of the organization. The discussions during the interviews combined with the response to the structured interview and the open questions provided sufficient insight to classify the enterprise architecture maturity.

#### *Alignment*

The alignment of high performance workplace technologies with the enterprise architecture is proposed by an evaluation of the characteristics of the HPW technologies that theoretically should improve the IT strategy per enterprise architecture maturity phase. Each phase of enterprise architecture maturity exemplifies a different vision on IT strategy and has different characteristics. From the description of each phase by Ross (2003) and Ross et al (2006) several differentiating keywords have been selected. The combination of keywords with the overarching vision on IT strategy made it possible to evaluate which high performance workplace technologies should have the most added values in which enterprise architecture maturity phase. For instance, the standardized technology phase (stage 2) is characterized by IT efficiency. Cost reduction by implementing standardized technology is critical herein. Thus, the added value of a high performance workplace technology for this phase should be;

cost reduction. Web content management is such a cost reduction high performance workplace technology since it reduces the amount of IT overhead required to manage internal and external Web sites. Consequently, this high performance workplace technology aligns with the enterprise architecture maturity phase 2.

The business modularity phase (stage 4) is characterized by strategic agility. Being able to sense and respond rapidly is critical herein. Thus, the added value of a workplace technology is relating to the “quick sense and respond” capabilities. Ubiquitous collaboration is such a high performance workplace technology that enhances the ability to respond quickly, by enabling collaboration with anyone, at any place, at any time. Consequently, this high performance workplace technology aligns with the enterprise architecture maturity phase 4.

The high performance workplace technologies that align with phase 2, will have added value for organizations in further phases as well, however not vice versa. Web content management will have added value for organizations in latter stages than stage 2, since reducing the IT overhead is (normally) beneficial for all organizations. However, ubiquitous collaboration does not add value to organizations in stage 2, when the strategy of IT of an organization is to reduce costs. The ability of collaboration with anyone, at any place, at any time is of lesser value for organizations who apply it for cost reduction than for organization who want to improve strategic agility.

#### 4.4.4 Results case studies

In this section, the results of the empirical research are presented. First, we present the background and some characteristics of each of the cases. Second, we analyze the cases with regard to the proposed propositions and conclude with lessons learned.

##### *InSure Case*

InSure feels that insurance is perceived as unnecessarily complicated by most customers. They want to prove that it can be done differently. Their strategy is to be very clear (on forehand) to their clients about the products and services they provide. InSure provides, besides financial compensation, reimbursement, and exerts in preventing problems. Since the end of 2005, InSure is part of a European insurance group. It is offering a wide variety of damage-, health- and life insurances for private and companies. In addition, it takes care of the retirement of 2.9 million (ex-) employees and they give advice about working conditions and reintegration for instance. The clientele of over one million private users and several hundred thousand companies makes InSure one of the largest insurance companies in the Netherlands.

InSure perceives itself to have a harmonizing relationship with its environment. Exercising flexible work times enhanced the work-life balance for the employees. Their strategy of providing clear products and services illustrate a high concern with the customer’s (insurance) needs. The building of InSure propagates an open collaborative environment, the foremost characteristic of InSure and their way of working, the office is to a large extent open and is furnished with glass walls. InSure recognized opportunities in the advancing

information technologies (mobile telephones, pc's and networks) during the mid-nineties. The possibilities they could provide triggered InSure to rethink their way of working. So, investments for adjusting the technical infrastructure and the wiring for their new office were made.

From 1996 till now, the turnover of InSure has quadrupled (the turnover/employee ratio is substantially higher than industry average). Increase in productivity (research results showed that employees who work at home are more productive than those who work in the office), vitality, knowledge sharing, and brand awareness. The new working concept expanded the capacity of workplaces from 950 employees to 1,500 employees. The job satisfaction increased, absence through illness decreased, the employees became proud of their company, the employees expressed themselves positively about their employer through amongst others an increase in transparency, freedom and trust facilitated by the new (company) culture.

#### *CommerCe Case*

The CommerCe organization is one of the 21 chambers of commerce in the Netherlands. It has a general board that represents the number and type of companies registered in the region. The main tasks of CommerCe are determined through this board under close watch by the Ministry of Economic Affairs. These tasks are: implementation of economic legislation; providing information; stimulate the (regional) business environment. CommerCe has 215 employees and it is financed through the payment of individual products and services by the customers. And the remaining costs are covered by the yearly contribution which each organization - registered in the trade register - has to pay. The number one task for CommerCe is to keep the trade register accurate. In the Netherlands it is compulsory for almost each company to register in the trade register. This trade register contains information about the location of the company, a description of the company, key figures, information concerning moratorium of payments and more.

In March 2000 CommerCe started the initiative for a new way of working. The new acquired building proved a bit too small for the organization if it were traditionally architected as a cell office. Consequently, a flexible working concept was desired. In 2001, CommerCe launched a new working concept including shared workspaces, digitization, an office which facilitates working anywhere through a wireless network and enabling telework. One of their biggest challenges was changing the culture of the organization. The management style (e.g. not managing on presence) and address culture (address employees who unnecessary occupy facilities) are mere two examples for which adaptation was needed in the new work environment.

In 2004, CommerCe launched a new program that was initiated to clarify the intention of the new work style. Although every employee (including the managers) had no fixed workplace, it appeared that when a manager would seat somewhere once, employees would abstain from that workplace even when the manager was not in the office. One of the primary reasons to choose for this concept was the win-win situation. On one hand it provided CommerCe an innovative image, just after the opening approximately 2 to 3 tours through the office were

given on a daily basis. And on the other hand, the total costs for the innovative office concept were lower than the traditional architected office.

Objective measurements for productivity haven't been exercised; this is partly due by the extensive changes CommerCe was confronted with since 2000, thus making it difficult to compare the old and new way of working. Absence because of illness has decreased, this is however a national trend, so it is unsure if the new ways of working can be credited for this. A third party has examined the employee satisfaction and 80 percent of the employees do not want to return to the old situation.

#### *BanCo Case*

BanCo is a full-range financial services provider operating worldwide. BanCo creates customer value by providing the best financial services for their clients, ensuring the continuity of these services and demonstrating commitment to their clients and their environment. She distinguishes herself with her cooperative fundamentals which results in a high social responsibility for the environment, and her triple A status, the highest qualification for creditworthiness. Today, BanCo comprises of 188 independent local Dutch branches and a central organization, which provide financial services and products to the Dutch retail and business markets. Besides the Dutch market, BanCo started to enter the international market. Overall, BanCo has offices in 38 countries with over 50,000 employees. They had a turnover of over 10 billion euro and a net profit of approximately 2.35 billion euro in 2006.

BanCo is improving the interaction and information sharing culture within departments by introducing instant messaging and SharePoint. Currently, it is developing a new way of working and they will move to a new head office in 2010. Overall, the culture at the BanCo is characterized by lots of meetings, a cooperative drive, a "nine to five" mentality (although slowly changing) and a real bank culture with social ties (in most departments). The foremost trigger for the introduction of new ways of working is the need for reduction of 'internal regulation'. Currently, they are bound to a large number of rules, developed in-house or put on by the external environment (politics or (inter)national rules) both steadily increasing. Although the external regulations will stay, the challenge lies in reducing the amount of internal regulation (procedures), to create a result oriented environment instead of a rule-driven organization.

Another internal trigger has to do with expected human resource issues. A substantial part of the current workforce of BanCo will leave the organization for retirement within 10 years, multiplied with a shrinking workforce in the developed countries in the coming 50 years triggered them to introduce a working concept that besides increase productivity and employee satisfaction creates an image that attracts the new workforce as well.

BanCo expects effects on the organizational level and the individual (employee) level, which will have an indirect effect on the organizational level as well. The main target is to increase customer focus, which should increase customer satisfaction. BanCo is planning to do so by providing the employees with freedom to make their own choices regarding where, when,

how and with whom they work, which will cause employees to have and maintain customer focus. This freedom will influence the performance and lives of the employee. It will enable them to schedule their own life better, so they can combine their work with for instance childcare or school better. The freedom is likely to benefit Banco in the form of strategic flexibility. Not being bound by procedures should enable them to respond quicker to opportunities in the market.

#### *Validation of Propositions*

In this section the propositions will be validated. All propositions are related to organizational performance, thus an overview of the perceived organizational performance will be provided and then each proposition will be reviewed.

#### *Organizational Performance*

Table 26 provides the overall perceived performance outcome and Appendix A presents the details of the measurements in InSure, CommerCe, and BanCo. Seventeen items were used to assess the perceived performance. Seven items on perceived organizational performance, four items on perceived market performance adapted from Delaney and Huselid (1996) and six items on strategic flexibility adapted from Saini & Johnson (2005). The total organizational performance builds on the notion that the perception of performing better or much better than that of organizations who do the same kind of work indicates a higher performance. And that the easier it is for an organization to perform certain tasks indicates a higher performance as well. Since CommerCe is a non-profit organization the questions 8 till 11 do not apply. Another notion is that CommerCe is the only organization of its kind in the Netherlands, thus the other regional chambers of commerce are used for comparison.

**Table 26: Empirical results case studies**

Variables	Cases		
	InSure	CommerCe	BanCo
Perceived Organizational Performance (level)	3.1	3.0	2.3
Perceived Market Performance (level)	2.9	na	2,0
Perceived Strategic Flexibility (level)	4.8	5.5	5.0
(Potential) Use High Performance Workplace Technologies (phase)	3	3	3
Enterprise architecture maturity (phase)	4	3	3
Alignment	No	Yes	Yes

The average perceived organizational performance is for all three organizations higher than 2 which represent 'same' performance. Thus, all three organizations perceive themselves to have higher organizational performance than organizations that do the same kind of work. Banco perceives themselves to perform slightly better than other organizations that do the same kind of work with an average perceived organizational performance of 2.3. InSure perceives themselves to be performing 'better' than organizations who do the same kind of work with an average of 3.1. And CommerCe perceives herself to be performing 'better' than other chambers of commerce - with an average of 3.0, see Table 26.

The average perceived market performance is the same (2) compared to other organizations that do the same kind of work for BanCo, and is perceived better (2.9) by InSure. The average perceived strategic flexibility is higher than 4, which represents neutral, for each organization. And higher than the average (4.4) found in the study of Saini & Johnson (2005) under a sample of 122 online brokerage firms. The average perceived strategic flexibility for InSure is 4.8, for CommerCe is 5.5, and for BanCo is 5. Thus all organizations perceive to have a higher strategic flexibility as well.

Proposition 1 is concerned with the usage of high performance workplace technologies in relation to organizational performance.

*P1: Utilizing more high performance workplace technologies results in higher organizational performance, market performance and strategic flexibility.*

To validate these propositions an analysis of the organizational performance, strategic flexibility and the high performance workplace technologies is required. The utility of high performance workplace technologies is presented in Table 26 and in more detail in Appendix B. Two aspects 'jump out' of this table, namely the extensive utilization of high performance workplace technologies (twenty-seven) of InSure and the planned utilization of technologies by BanCo in the near future (twenty-five) opposed to the use of ten high performance workplace technologies presently. InSure utilizes by far the most high performance workplace technologies and has the highest perceived organizational performance. BanCo and CommerCe utilize respectively ten and six high performance workplace technologies and have an organizational performance of 2.3 for BanCo and 3 for CommerCe. The results indicate partial support for proposition 1, since the organizational performance is the highest when utilizing the most high performance workplace technologies; however CommerCe utilizes only six and perceives to have a higher performance than BanCo with ten high performance workplace technologies. The difference can be explained by the fact that CommerCe is a public organization and InSure and BanCo are private organizations. CommerCe is not really exposed to competition, thus every use of the technologies would lead to higher performance. Whereas, in the private sector more utilization of high performance workplace technologies is required, since it is more difficult to perform better than similar organizations. Utilizing more high performance workplace technologies results in higher market performance according to the data. The perceived strategic flexibility of InSure is the lowest of the three cases with the highest use of HPW technologies. BanCo utilizes ten high performance workplace technologies and has the second highest strategic

flexibility. And CommerCe perceives to have the highest strategic flexibility with the lowest number of high performance workplace technologies. Consequently, higher utilization of high performance workplace technologies does not result in higher strategic flexibility. From the analysis of the utilization of high performance workplace technologies the following hypotheses can be drafted;

*H1: Utilizing more high performance workplace technologies results in higher organizational performance for private organizations.*

*H2: Utilizing more high performance workplace technologies results in higher market performance for private organizations.*

#### *Enterprise Architecture*

Proposition 2 relates the enterprise architecture with organizational performance.

*P2: Higher maturity level of the enterprise architecture results in higher organizational performance, market performance and strategic flexibility.*

Table 26 presents the empirical results and Appendix D illustrates the enterprise architecture maturity based on an evaluation of their management practices. Ross et al argue that: “*The management practices formalize organizational learning about how to leverage IT capabilities and adopt business process changes. Different stages place different demands on management, so some management practices are important for capturing the benefits of early stages while other practices are less important – and sometimes unnecessary – until later stages*” (Ross et al 2006, p 101). Therefore, we can conclude that organizations will only have the management practices needed for their current enterprise architecture stage or the stage they would like to mature to. Consequently, we should be able to evaluate the enterprise architecture maturity level by analyzing the management practices. However, it is uncertain whether the usage of the management practices alone can really indicate the maturity level. Therefore a qualitative analysis is performed as well in the case organizations.

InSure lacks four management practices at the moment. When viewing the table, InSure finds itself between phase three and phase four. During an interview with a project manager it became clear that InSure is in the business modularity stage (phase four). InSure has flexibility high on the agenda. They have an infrastructure on which they build modules. For each new module business cases are made, in which the added value and the flexibility of the modules is checked.

CommerCe stands out in how they have formalized only a few management practices. Based on this evaluation CommerCe is positioned in phase 1. However CommerCe is a relatively small organization and does not have the funds for a fulltime enterprise architecture team. During their change they temporarily hired experts. Therefore the rating by management practices gives a distorted image of the enterprise architecture. Again a qualitative analysis went along with the inquiry for their enterprise architecture maturity and therefore we concluded that the enterprise architecture of CommerCe represents phase three. Phase three is characterized by digitizing the core, sharing data and business operational efficiencies,



which reflects the situation of CommerCe. CommerCe improved their business by digitizing all their documents and making them available 'anytime, anywhere', enabling them to share data better. And the digitization will enable CommerCe to facilitate a single face to the customer in the future.

Based on this assessment BanCo finds itself in phase four. From the qualitative analyses it appeared that BanCo pursues strategic agility (phase four), but their enterprise architecture is in phase three. They have amongst others a huge legacy of systems, which makes it on occasion difficult to implement the designed processes. Consequently they are not in the phase of business modularity, but find themselves in phase three, optimized core.

CommerCe and BanCo are both in enterprise architecture maturity phase three and InSure is positioned in phase four. The highest perceived organizational performance and market performance is found at InSure, partially supporting proposition 2.

Enterprise architecture stage four should improve the flexibility of an organization (Ross et al, 2006) however the data does not support this. InSure with the highest (stage four) enterprise architecture has the lowest strategic flexibility of the three cases. Resulting in the following two hypotheses;

*H3: Higher maturity level of the enterprise architecture results in higher organizational performance for private firms.*

*H4: Higher maturity level of the enterprise architecture results in higher market performance.*

Proposition 3 concerns the alignment of the enterprise architecture maturity with the use of high performance workplace technologies.

*P3: Higher alignment between the enterprise architecture and high performance workplace technologies results in higher organizational performance, market performance and strategic flexibility.*

The alignment of the technologies with the enterprise architecture phases is presented in Table 26. CommerCe and BanCo are both aligned, being in phase three of enterprise architecture and utilizing most high performance workplace technologies that correspond to that phase. The enterprise architecture of InSure facilitates phase four high performance workplace technologies, however the majority of high performance workplace technologies used correspond most to phase three.

When comparing the alignment with the organizational and market performance, no evidence is found to support proposition 3. However alignment does seem to benefit the strategic flexibility, supporting proposition 3. Resulting in the following hypothesis:

*H5: Higher alignment between the enterprise architecture and high performance workplace technologies results in higher strategic flexibility.*

Interestingly, higher strategic flexibility only appeared when aligning the enterprise architecture with high performance workplace technologies. Opposed to the findings of the research of Ross et al (2006), which showed that higher levels of enterprise architecture maturity leads to higher flexibility and higher strategic agility.

#### **4.4.5 Conclusions, limitations, further research**

The article deals with the research question: what is the impact of advanced workplace technologies and enterprise architecture on organizational performance?

The explorative case study results indicate that to use more high performance workplace technologies appear to benefit organizational performance and market performance. Hence organizations should definitely review which high performance workplace technologies could benefit their organizations. We bear in mind that the technologies only provide added value when they are actually adopted by a critical mass of knowledge workers. As stated earlier it is not so much whether or not an organization adopts particular workplace practices but rather how the workplace practices are actually implemented within an organization (Black & Lynch, 2001). Similar to technologies, it is about how a technology is implemented and the success of the implementation is reflected by the usage.

Maturing the enterprise architecture appears to benefit organizational performance and market performance as well. An interesting result is that empirical data show no strong relation between that the organization at maturity level four with the level of strategic flexibility. Enterprise architecture might not be a necessary and sufficient condition that will lead to higher levels of strategic flexibility as such.

#### *Limitations*

The research in this article is exploratory and the first phase of a research project measuring the impact of workplace technologies and enterprise architecture on the organizational and individual performance. There are two limitations of this study. The developed measuring instruments in this study are explorative in nature and need to be further improved in terms of internal and external validity. The second limitation is that there is a limited number of interviews with key stakeholders executed in each of the cases. A higher number of interviews might lead to a better level of triangulation and a better argumentation of the empirical results.

#### *Future Research*

The next step in this research project is to expand the number of case studies and improve the internal and external validity of the developed measuring instruments

## 4.5 Studying Multiple Media Use: a Network Multiplexity Approach<sup>18</sup>

### 4.5.1 Introduction

#### *Background*

Information Technology (IT) enables effective communication, collaboration and knowledge sharing. Organizations that take advantage of ongoing advances in IT will therefore be better able to hold their competitive position in the increasingly knowledge intensive economy. As managers become aware of the necessity of introducing technological tools, new technological tools are introduced at the workplace and consequently communication media choices for employees grow. Watson-Manheim & Belanger (2007) rightly indicate that in order to understand current media usage in organizations, employees' use of multiple media should be investigated. This current study underscores this view and takes up the study of Watson-Manheim & Belanger by examining employees' use of multiple media in the performance of their work activities.

This study distinguishes itself from the study of Watson-Manheim & Belanger by taking a network multiplexity approach that focuses on the effects (multiple) social networks have on multiple media usage. In order to do this, this study refines the proposed framework of Watson-Manheim & Belanger for investigating media use.

Besides, this study gathers information on the, by employees perceived, effectiveness of media usage. In this way, the effect of media use consistency among employees on perceived effectiveness will be assessed.

#### *Research Problem*

To explain media attitudes and use, past research brought up rational as well as social explanations. Rational explanations take into account the characteristics of media, such as their ability to provide instant feedback on a message. Social explanations focus on the social influences on an individual's media attitudes and use, such as the influence of a close co-worker. Findings on the relational explanations are contradictory, while the findings on the social explanations provide moderate support (e.g. Daft et al., 1987; Markus, 1994; Fulk & Boyd, 1991).

To examine social explanations on media attitudes and use, researchers have investigated the influence exerted on media attitudes and use through (frequent) communication relations. They found weak evidence (e.g. Rice & Aydin, 1991; Schmitz & Fulk, 1991). Influence exerted through other kinds of relationships as a communication relationship, such as a friendship relation, has not been examined. Nonetheless, Contractor & Eisenberg (1990) indicate that the multiplexity of relations, which refers to the number of different types of relations that exist between two people (such as a friendship and/or an information exchange relation), can determine media perceptions and use. Therefore, as former research refrains

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<sup>18</sup> Legerstee, M. (forthcoming 2008) Studying Multiple Media Use: a Network Multiplexity Approach, Master Thesis Rotterdam School of Management, Erasmus University Rotterdam

from doing so, in this study a network multiplexity approach is taken to research media use. By mapping and analyzing relationships between and positions of employees in three different types of social networks, respectively the 'information exchange', 'decision-making' and 'workplace friendship' networks, effects of these different social network relationships and network positions on multiple media usage is examined. In this way, this study further operationalizes others' influence on media use. Fulk & Boyd (1991) indicated that existing findings provide sufficient validity to continue developing the proposed models into theoretical statements on organizational communication, this study assists in doing this.

Until now, Media Choice Research has focused mainly on the selection of one medium, or on the comparison between two media (Haythornthwaite et al., 1995; Watson-Manheim & Belanger, 2007; Webster & Trevino, 1995). Moreover, social influence theories have been applied mostly to new media (Trevino et al., 2000). Nowadays, however, employees have several communication media at their disposal that can be used for different communication purposes. Besides, Webster and Trevino (1995) found that social influences affect both traditional and new media. Therefore, past research limits our understanding of current media usage in organizations and may not capture the complexities of multiple communication media availability. Instead, to overcome this lack of understanding, this study takes into account a collection of eight different types of communication media<sup>19</sup>, comprising both traditional and new media, and by that means contributes to a better understanding of today's general media use of employees.

Since in past research, media choice is often isolated from ongoing work practices (Watson-Manheim & Belanger, 2007), a lack of understanding media use in the performance of work activities is the result. For instance, past research has examined whether e-mail was used by employees or not, without taking into account for which purposes e-mail was used. Barry & Fulmer (2004) state that the how's and the when's of individuals' routinely use of a diversity of media tools for performing work activities needs to be better understood. In addition, Lamb & King (2003) and Saunders & Jones (1990) indicate that researching media use in the performance of organizational activities yields a better understanding of media use. Watson-Manheim & Belanger (2007) agree on this and therefore examine which media tools employees use for five communication purposes that are common in the performance of work activities, e.g. information sharing and conflict resolution. This study chooses to take up the identified communication purposes by Watson-Manheim & Belanger and in this way provides further insight into media use in the performance of work activities.

### *Objectives*

The main objective of this study is to measure the effects of multiple types of social network relationships and network positions on employees' media usage in the performance of work activities. Apart from the main objective, this study also tries to gain more insight into the perceived effectiveness of media use. For this, the information gained on general use of

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<sup>19</sup> Audio Call (including [mobile] phone calls and computer audio calls), Conference Call, E-mail, Instant Messaging, Groove, Sharepoint, Scheduled Face to Face, and Ad hoc Face to Face

multiple media will be related to perceived media use effectiveness. Consequently, the subsidiary objective is to determine the impact of media use consistency among employees on their perceived effectiveness of that media usage.

### *Research Design*

This study uses the (single) case study to meet the formulated objectives. Microsoft Nederland is the case company of this study. A cross-sectional online questionnaire was developed and distributed amongst the employees of two departments of Microsoft Nederland in order to solicit the respondents sociometric questions, as well as questions on their media use.

### **4.5.2 Theoretical Framework**

At the moment of writing, this current study is still in progress. For this reason, the theoretical framework is emphasized. The section is structured as follows. First, literature on media choice will be examined concisely. Then, the by Watson-Manheim & Belanger proposed framework for media use, which this study takes up, will be discussed. After that, literature on social networks relevant for this media use research is considered and hypothesis are formulated. Finally, based on all this, the conceptual model of this study is presented.

Theories that explain communication media choice/use can be grouped into two broad categories (Carlson & Davis, 1998; Markus, 1994; Webster & Trevino, 1995): 'Rational Explanations for Media Choice' and 'Social Explanations for Media Choice'. The first category is involved with rational choice theories that emphasize rational explanations for media choice. The most important theory of this category, which has been most influential in the media choice literature (Lengel & Daft, 1988), is Media Richness Theory (Daft & Lengel, 1984, 1986). This theory deals with determining the most suitable communication medium for handling equivocality and uncertainty in communication messages. Media are considered rich when they reduce equivocality, e.g. face-to-face or telephone, and lean in case they reduce uncertainty, e.g. e-mail. Nonetheless, apart from some studies which report supporting findings for Media Richness Theory (see Daft et al., 1987; Trevino et al., 1987; Trevino et al., 1990; Russ et al., 1990), there is an equal number of studies with contradicting results (see El-Shinnawy and Markus, 1997; Fulk & Ryu, 1990; Markus, 1988, 1994; Rice & Shook, 1990).

The second category comprises social influence theories that emphasize social explanations for media choice. Social Influence Model of Technology Use (Fulk et al., 1988, 1990; Fulk et al., 1987; Schmitz, 1987, 1988; Schmitz & Fulk, 1991), which is one of the most well-known models belonging to this category, was developed as a reaction to the failure of the rational choice theories to explain media choice more comprehensively. Drawing particularly on the assumptions from Social Information Processing Theory (Salancik & Pfeffer, 1978), this model postulates that "individuals' media perceptions and use are, in part, socially constructed" (Schmitz & Fulk, 1991, p. 490). This means that social information within organizations, such as statements and behavior of colleagues, influences and lead to substantial variations in attitudes and use of communication technologies. Even the richness of media, by Media Richness Theory considered objective, varies across individuals according to the model. The

drawback of the proposed Social Influence Model of Technology Use, however, is that it does not make explicit the social mechanisms through which social information processes operate, i.e. the mechanisms by which social information flows to and from persons, which shape media perceptions and behavior (Contractor & Eisenberg, 1990; Rice & Aydin, 1991). Since social networks provide the mechanisms by which individuals are exposed to social information, several researchers have taken a social network approach to test the influence of social information processes on media attitudes and use as proposed by Social Influence Model of Technology Use (e.g. Schmitz & Fulk, 1991, Rice et al. 1990, Rice & Aydin, 1991). In general, these studies bring forth findings that support the proposed Social Influence Model of Technology Use (Fulk & Boyd, 1991).

As indicated, as a reaction to the failure of rational choice theories to explain media choice comprehensively, social explanations for media choice were proposed. Kock (2004) indicates that by nature social theorists are likely to turn down entirely the proposed rational theories for media choice. However, the rational theories *do* explain media choice to a certain extent (even though this is little), and, therefore they should not be rejected. According to Kock, existing studies should not be questioned since weaknesses have already been indicated. Alternatively, new theoretical frameworks should be proposed that integrate the rational and social theories. One such theoretical framework is the 'Framework for Investigating Communication Media Repertoire', proposed by Watson-Manheim & Belanger (2007).

This framework will be discussed first. Then, based on prior literature, little adjustments to the model are made which results in a refined framework. Ultimately, after formulating the hypotheses, the conceptual model of this study that stems from this framework is provided.

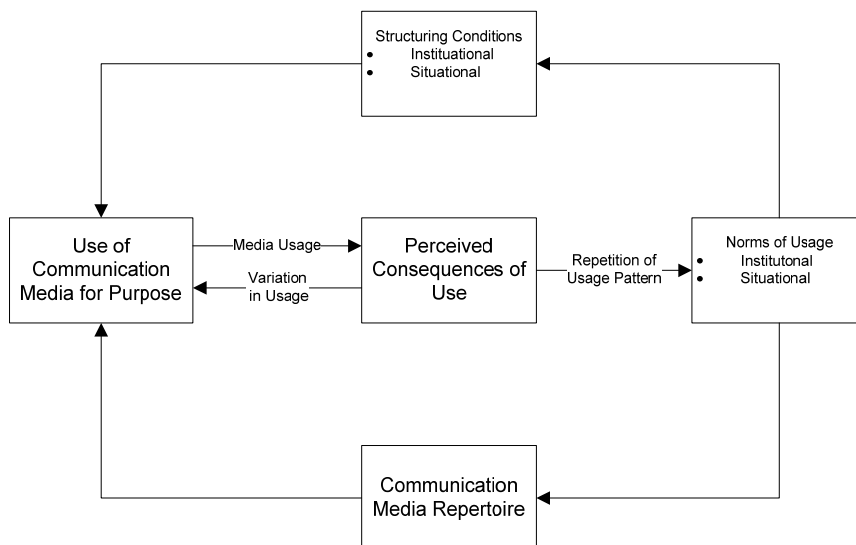
In their study, Watson-Manheim & Belanger (2007) strive to provide more insight into the understanding of media usage in organizations where employees have multiple communication media at their disposal. Besides, purposes for which the media are used are taken into account as well. Just as the study of Watson-Manheim & Belanger, this current study examines multiple media use and takes into account these purposes for which the media are used. A third item of interest applied in the study of Watson-Manheim & Belanger that will be employed by this study as well, is the usage of the notion '*communication media repertoire*' to investigate media use. This notion is discussed first.

The notion communication media repertoire is adapted from the concept 'genre repertoire' proposed by Orlikowski & Yates (1994), which is on its part an extension of the concept 'genres of organizational communication' (Orlikowski & Yates, 1992). Watson-Manheim & Belanger (2007, p. 268) formulate a communication media repertoire as follows: "*the collection of communication channels and identifiable routines of use for specific communication purposes within a defined community*".

Thus, a community has one communication media repertoire, which consists of all communication media available for use in that community, plus their accompanied routines of use for meeting the communication purposes. To clarify, a repertoire can contain one as well as several routines for each communication purpose included in the repertoire.

Amongst other factors, Watson-Manheim & Belanger argue that the communication media repertoire of a community influences the *actual* use of a certain communication medium for a specific communication purpose at a particular moment in time. This study adopts this view and consequently uses a communication media repertoire to investigate media use as well. Now, the study of Watson-Manheim & Belanger and their proposed framework is further discussed.

In their study, Watson-Manheim & Belanger first identify how and when certain communication media is used at two departments (of two different organizations). They identify a communication media repertoire for each of the two departments and find that between the two repertoires there are similarities as well as discrepancies. For these discrepancies, they come up with explanations that can be grouped into two categories, respectively 'institutional factors (conditions)' and 'situational factors (conditions)'. Under the category institutional factors fall a) 'physical workplace structure', b) 'interpersonal trust' and c) 'organizational incentives to use communication media'. For instance, Watson-Manheim & Belanger argue that differences in the way the workplaces are structured, e.g. cubicle offices vs. flexible workplaces, will lead to differences in communication media use. Included in the category situational factors are a) 'task characteristics' (which requires interactivity out of which communication purposes come forth), e.g. planning, b) 'message characteristics', e.g. sensitive information, and c) 'urgency'. Based on the identified uses and influencing factors on uses, Watson-Manheim & Belanger propose the illustrated framework shown in Figure 28.



**Figure 28: Proposed Framework for Investigating Communication Media Repertoire (Source: Watson-Manheim & Belanger, 2007, p. 283)**

The title of the framework can bring forth some misunderstanding, since it fails to comprehend the full explanatory reach of this model. This is because this framework is not only a framework to investigate communication media repertoire, as its title suggest. Instead, it can be used to investigate and explain actual use of communication media for a certain purpose, because it portrays the different factors that influence this use. Communication

media repertoire is only one of these influencing factors. Therefore, in the preceding section, this framework was referred to as a framework for investigating media use and not communication media repertoire.

As can be derived from the framework, 'structuring conditions', which consist of the above described institutional and situational factors (conditions), influence the (actual) use of communication for purpose. Watson-Manheim & Belanger indicate that institutional factors, for instance a monetary incentive to share best practices by putting knowledge on the organization's intranet, are more prescriptive of actual use than situational factors. For a particular communication purpose at a specific moment, situational factors, like urgency, are determining. Next to these structuring conditions, the communication media repertoire also directly influences media use, since it provides a collection of routines of media use of the community in question.

Furthermore, the framework indicates that out of the actual use of communication media come forth the perceived consequences of use, such as the perceived effectiveness of a communication medium for a certain communication purpose. It is argued that these perceived consequences on their part both influence the actual use of communication media and the norms of usage though the repetition of usage patterns. These norms of usage are also differentiated as institutional and situational. An example of an institutional norm at a department is that e-mail should be replied to within 4 hours. An example of a situational norm is that for urgent situations the phone is used. These norms of uses both influence the structuring conditions and the communication media repertoire.

#### *Refinement of Watson-Manheim & Belanger's Framework*

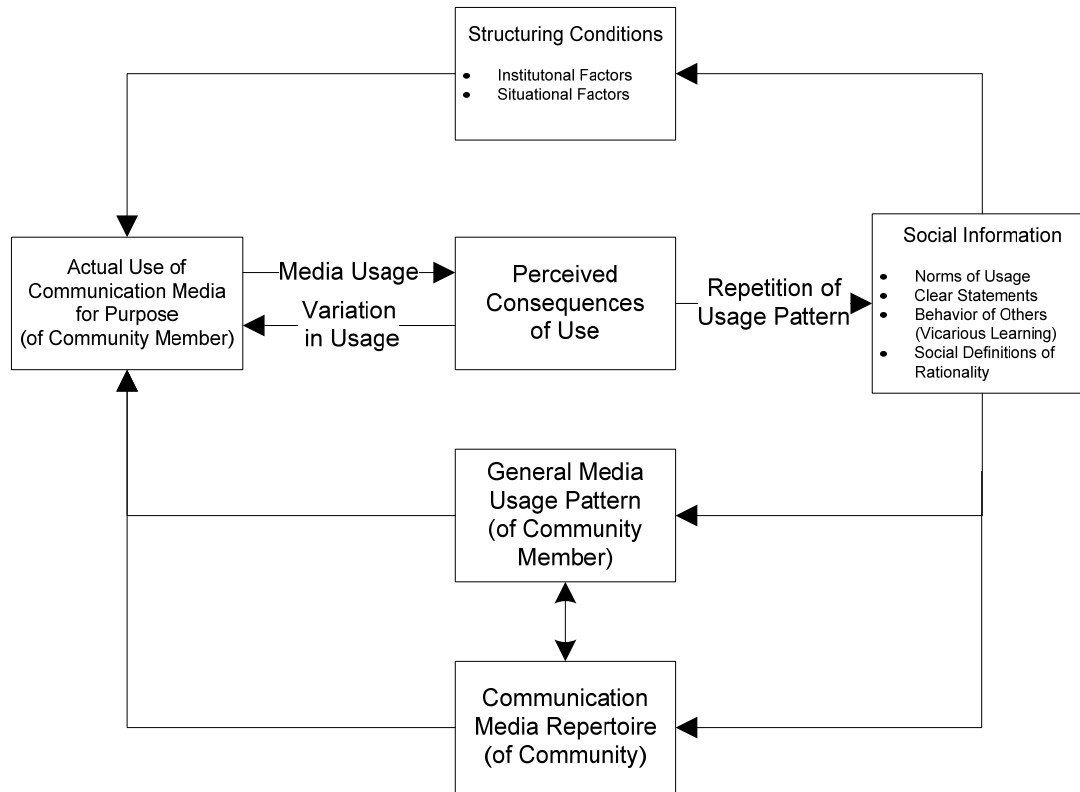
As mentioned above, in order to examine the influence of social relationships and positions on multiple media use, this study adopts the concept of communication media repertoire and examines just like Watson-Manheim & Belanger use of multiple media in the performance of work activities by examining multiple communication media and taking into account communication purposes. Next to that, the proposed model of Watson-Manheim & Belanger forms the basis for the conceptual model that will be proposed in the following section. However, the conceptual model cannot simply stem from the framework as proposed by Watson-Manheim & Belanger. The framework needs to be refined first. This refinement will result in a framework that is even more complete in its explanation of media use. The reason for and the refinement itself will be explained now.

The drawback of the study and the accompanied proposed framework of Watson-Manheim & Belanger is the fact that it does not reckon other social influences on media use next to the norms of usage. Next to group (usage) norms that influence media use, also clear statements by others, vicarious learning (modeling effective behavior of others) and social definitions of rationality are identified as types of social information that influence media use (Fulk & Boyd, 1991; Fulk et al., 1990). In this study, therefore, 'norms of usage' is replaced by the more comprehensive notion 'social information', of which norms of usage forms a part.



Furthermore, in the study of Watson-Manheim & Belanger, little attention is paid to the effects of social networks on actual media use. Watson-Manheim & Belanger do mention the influence of social structures on media use. However, the only matter being discussed regarding social structures is interpersonal trust. Influences such as strength of a relationship or the position of a person in a social network are not being mentioned. For this reason, in their study 'interpersonal trust' is indicated as one of the influencing factors, next to the physical workplace structure and organizational incentives to use communication media, and not 'social structures'. Nonetheless, the above discussion indicates that social networks have an effect on media use (e.g. Rice & Aydin, 1991; Rice et al., 1990). For instance, it can be reasoned that normally an individual uses e-mail to request information, but in case that individual requests information from a close friend he/she will use the phone instead. As a result, instead of using 'interpersonal trust', using the more comprehensive notion 'social structures' is more appropriate and should be used. Since the different identified institutional factors themselves are not depicted in the framework, only the category name institutional factors is illustrated, this adjustment is not visible in the refined framework.

The final refinement of the framework is concerned with the individual's own general use of multiple media. Next to the direct influence of the community's communication media repertoire and the structuring conditions on actual media use, in this study it is argued that an individual's own general media usage pattern has influence on its actual use of media for purpose. To clarify, a community has one communication media repertoire, which includes, as aforementioned, all media available to the community's members and the routines of use of these media to meet the communication purposes, which are identified by examining all usage patterns of the community members. Next to that, every community member is considered to have their own 'general media use pattern', which includes the media and accompanied use routines to meet the communication purposes of that specific individual. This general media usage pattern is, just like the communication media repertoire, considered to be influenced by the different types of social information (of which norms of usage is one type of social information). Moreover, both the communication media repertoire and the general media usage pattern of individuals are likely to influence each other. The abovementioned refinements lead to the 'Framework for Investigating Media Use for Purpose' as shown in Figure 29.



**Figure 29: Framework for Investigating Media Use for Purpose**

Just as the Social Influence Model of Technology Use, this framework does not make explicit the social mechanisms through which the different types of social information exert influence. In the next paragraph, therefore, social network concepts are selected and explained that define the mechanisms by which social information shapes media perceptions and behavior. Hypothesis that will be tested in this study are formulated along. The Conceptual Model, stemming from this framework for Investigating Media Use for Purpose, incorporates these network concepts and formulated hypotheses, and is presented at the end of the section.

### *Social Network Concepts*

Different measures exist to analyze social networks. Contractor & Eisenberg (1990) put forward several network measures that examine social networks in order to enlighten the effects of social networks on media use. Out of these proposed measures *actor centrality*, which is an actor level measure, and *relationship strength* and *tie strength*, which are both dyadic level measures, are selected. These three measures are now discussed and hypothesis that relate to these measures are formulated along.

The first social network measure that will be applied in this study is *actor centrality*. A central actor is defined by Wasserman & Faust (1994) as an actor who is involved in many relationships and is therefore visible to others. Central actors are key communicators and are identified as important/prominent (Contractor & Eisenberg, 1990). These central actors are

labeled as 'stars', the opposite of central actors are called 'isolates' (Wasserman & Faust, 1994). In literature, persons in a central position are viewed as powerful because of their access to and control over relevant other persons (Brass, 1984). Marsden (1981) indicates that persons central in organizations, i.e. who are well connected, can play a key role in influencing perceptions and behaviors of other persons in the social network. Several media- use related studies have researched this influence of prominent persons on others and found support (Contractor & Eisenberg, 1990). For example, a study by Rice et al (1988; cited by Fulk et al., 1990) found that central persons adopt a new information system early and aid the development of a critical mass.

Based on this, it can be argued that an employee central in the social network of its department plays a key role in shaping the (media use) behavior of the many co-workers he/she is connected (close) to, and through this way has much influence on shaping the communication media repertoire of that department. In contrast, employees less central do exert less influence on shaping the communication media repertoire. Furthermore, they are less involved in relationships and for this reason less influence is exerted through relationships on their (media use) behavior. Therefore, they are likely to conform less to the communication media repertoire than the more central people do. As a result, it is more likely that an employee central in the social network of its department will have a general communication media use pattern consistent with the communication media repertoire of that department than an employee who is less central. This is reflected by the hypothesis formulated below. This hypothesis will be tested by measuring the centrality of employees in all three networks examined in this study.

*H1: An employee central in the (information exchange, decision making, or workplace friendship) social network of its department is more likely to have a general communication media use pattern consistent with the communication media repertoire of that department than employees who occupy a less central position in the social network.*

At the dyadic (pair) level, this study focuses on *relational strength* and *tie strength*. Relational strength is an attribute of a particular (single) relationship. It refers to the intensity of a relationship. For example, a relationship in which information is exchanged frequently is stronger than a relationship in which information is exchanged less frequently (Haythornthwaite, 1996). Tie strength, on its part, measures the strength of a tie, which depends on the number and types of relationships between a pair, and on the strength of each of the individual relationships (Haythornthwaite, 1996).

In literature, it is argued by Burt (1980) that people influence and are influenced by the people with whom they have direct contact. Erickson (1988) adds that individuals are most likely to compare and agree with people to whom they are strongly tied. Accordingly, Contractor & Eisenberg (1990) state that the strength and the multiplexity of a pair's communication will have influence on the attitudes towards and uses of media.

As indicated above, based on Erickson (1988), Rice & Aydin (1991) incorporate relationship strength in their study. They measured the strength of a relationship by frequency of communication. Their study shows that the degree of relationship strength influences, to a small degree, the extent of influence on attitudes toward an information system. In addition, Rice et al. (1990) found that frequently communicating pairs are more likely to either both adopt or not adopt an e-mail system.

Accordingly, it is assumed that employees having a strong relationship exert influence on each other's general media usage pattern and, as a result, these general media usage patterns are consistent. In this study, the relationship of which the strength is measured is the information exchange relationship. Consequently, the strength of a relationship between a pair is measured by information exchange frequency. Therefore, the hypothesis below is formulated.

*H2: The stronger the information exchange relationship between a pair of employees, the more likely they will have consistent general communication media use patterns.*

Both the studies of Rice & Aydin (1991) and Rice et al. (1990) focus on relationship strength by examining the frequency of communication. The strength of a tie, which can be measured by considering the number, types and strength of relationships between a pair, is not being examined, since frequency of communication is identified as only one kind of relationship (or one aspect of a tie). Nonetheless, Erickson (1988) states that persons who are strongly *tied* are most likely to compare and agree with each other. For this reason, this study examines the relational multiplexity to determine tie strength. To recap, relational multiplexity is the extent to which two actors are tied to each other by more than one type of relationship (Burt, 1983; cited by Brass et al., 1998). Sometimes multiplexity is considered to indicate the richness of a tie (e.g. Carroll, 2006). Haythornthwaite already applied the measure multiplexity in several studies related to media use. The conclusion of these studies is that the stronger the tie between a pair, measured through multiplexity, the more communication media is used to get in touch with each other (see e.g. Haythornthwaite, 2001 and Haythornthwaite & Wellman, 1998).

Hartman & Johnson (1989) argue that individuals having a high participation across different types of networks are influenced more by each other than individuals participating in only one type of network. They state that the breath of an individual's linkages, i.e. the multiplexity of an individual's ties, serves in providing an individual a diversity of information. Based on this, this study follows the line of thought that the stronger the tie between a pair of employees, the more influence they exert on each others' media use behavior and the more consistent their general communication media use pattern is. The strength of a tie between a pair is measured by the strength of the information exchange relationship the pair maintains and the presence (or absence) of a decision-making and workplace friendship relationship between the pair. The following hypothesis is formulated:

*H3: The stronger a tie between a pair of employees, the more likely they will have consistent general communication media use patterns.*

The final hypothesis is not involved with social network measures, but with the perceived effectiveness of communication media use. Social Presence Theory indicates that communication is effective when the extent of social presence conveyed by the medium meets the degree of social presence needed for the task. Media Richness Theory, on its part, indicates that communication is most effective if the extent of richness of the medium matches the extent of richness required by the level of equivocality of the message (Daft & Lengel, 1984, 1986; Daft et al., 1987). However, tests do not widely support Social Presence Theory and Media Richness Theory. The researchers in this study, who have put forward social influences on media to explain media use, have not considered the effectiveness of media use. Nonetheless, Watson-Manheim & Belanger (2007) indicate that when people maintain different routines of media use, this can bring forth complexities in work practices, such as duplicate or unnecessary exchanges. From this, it can be argued that lower consistency of media use will lead to lower perceived effectiveness of that media use. Accordingly, when an employee's general media use for a certain communication purpose is consistent with the routine of use for that purpose included in the communication media repertoire, it is likely that the employee's perceived effectiveness of this media use for that purpose is higher than when the consistency is lower. Therefore, the following hypothesis will be tested:

*H4: The higher the consistency between an employee's general media use for a certain communication purpose with the routine of use for that purpose included in the communication media repertoire, the higher the employee's perceived effectiveness of this media use for that purpose.*

The above discussed social network concepts and hypotheses lead to the final conceptual model we will use in this study (Figure 30). As is apparent from the model, this conceptual model stems from the before proposed Framework for Investigating Media Use for Purpose. The variables in red are examined in this study. The level of analysis of the measures is shown between brackets. The plusses imply a positive relationship between the variables in question. This conceptual model with its included hypothesis will be tested in this study.

At the moment of writing, the hypotheses are tested and the forthcoming results and conclusions are due in May 2008.

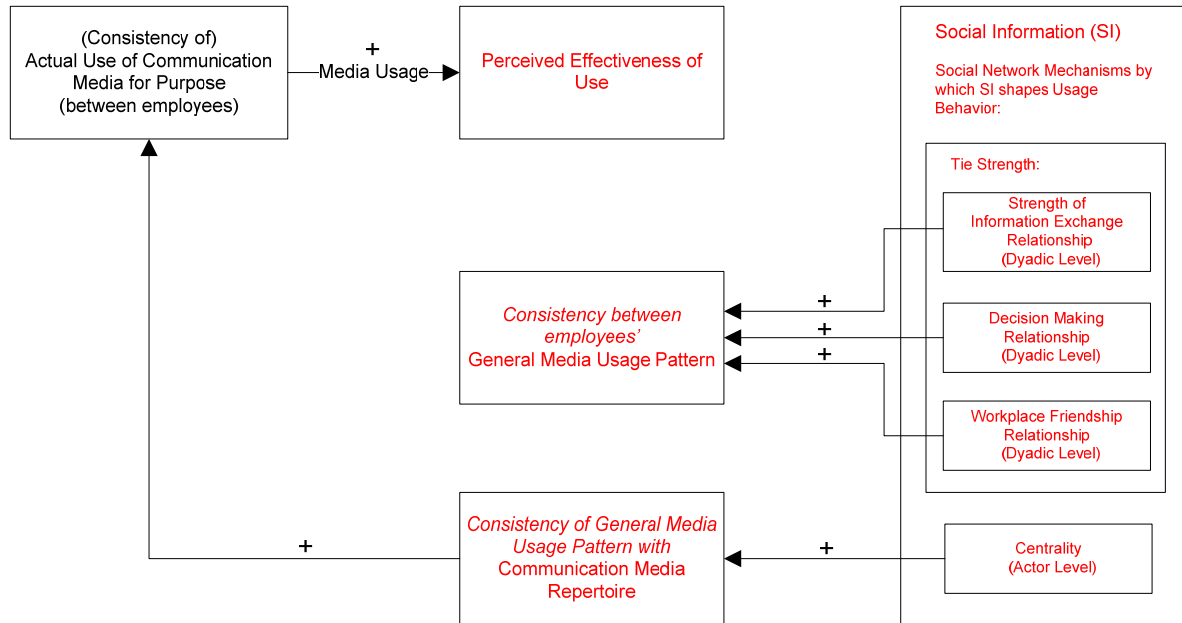


Figure 30: Final conceptual Model

## 4.6 Strategic Roles and Actions in Creating a New World of Work and New Work Concepts<sup>20</sup>

### 4.6.1 Introduction

*“Imagine organizations where bosses give employees enormous freedom to decide what to do and when to do it. Imagine that workers are allowed to elect their own bosses and vote directly on important company decisions. Imagine organizations where most workers aren’t employees at all, but electronically connected freelancers living wherever they want to. And imagine that all this freedom in business lets people get more of whatever they really want in life—money, interesting work, helping other people, or time with their families. These things are already happening today and—if we choose—they can happen even more in the future”, Thomas Malone, 2004.*

#### Background

Already in 483 B.C. the famous Greek philosopher Heraclitus of Efese wrote, “nothing is permanent, except change”. Although the notion of change is nothing new, the way it takes place is. Change has become less and less predictable and takes place at “exponentially increasing speed” (Kurzweil, 2005). Malone (2004) describes ways of organizing and working still atypical for most organizations today. But, how long will it take before these new ways will be integrated into organizational life as if they have always existed?

<sup>20</sup> Dupain, W. (forthcoming 2008) Strategic Roles and Actions in Creating a New World of Work and New Work Concepts, Master Thesis Rotterdam School of Management, Erasmus University Rotterdam

Friedman (2005) claims in his best-selling book, 'The World is Flat', that PCs, fiber-optic cable and software, referred to as the '*flat-world platform*', increased the pace of change in the world and revolutionized the way the world works and the practice of working. "By using computers, e-mail, fiber-optic networks, teleconferencing, and dynamic new software, it is now possible for more people than ever to collaborate and compete in real time with more other people on more different kinds of work from more different corners of the planet and on a more equal footing than at any previous time in the history of the world" (Friedman, 2005). Research by McKinsey (2007) corroborates this view and claims "it's no exaggeration to say that how we work, where we work, when we work, and what we do for work has changed more in the last two decades than at any time in history".

Furthermore "the '*flat-world platform*' empowered the individual" (Friedman, 2005). Computer-mediated communication increased the access and availability of information and made it possible to "connect and disconnect minds" not only face-to-face in physical environments, but also in a global information- and social space (Go and Fenema, 2003). ICTS, in this perspective, enabled "a potential change of legitimacy, in the sense of opening space for the individual to defy dominating coalitions of power and become an equal participant in the cyberspace discourse" (Mraovic, 2003).

In today's economy it is not the small elite anymore owning the capital of the firm, knowledge and social networks, instead it is each individual knowledge worker. In addition, there is a growing dependence of the economy on this knowledge, a trend believed to continue (CBS, 2007; McKinsey, 2007). This increasing demand for knowledge workers changed the contract and relationship between worker and organization even more (Lawler and Finegold, 2000; Rubery, 2002). Increasing, in particular, the power of today's knowledge workers to demand something back from the organizations they work in. This has translated into another contract with employees (Lawler and Finegold, 2000; Rubery, 2002), a higher focus on work-life balance (Konrad and Mangel, 2001; Lambert, 2000) and/ or increasing opportunities for self-actualization within the organization (Maslow, 1943).

So how we work has changed tremendously, but did the organizational context move along? Although, quite some research within organization- and strategy literature corroborates that creating and sustaining a competitive advantage demands continuous alignment of the organization (Balogun and Johnson, 2005; He and Wong, 2004; Slater and Narver, 1995; Yukl, 2004; Lewin and Volberda, 2001) the organizational context normally lags behind (Hannan and Freeman, 1984; Tushman and O'Reilly, 2006). Balancing environmental and organizational change has proven not to be easy as many barriers exist disabling and/ or slowing down organizational change (Leonard-Barton, 1992; Fiol, 2001; Levitt and March, 1988; Cohen, 1991; Cohen and Bacdayan, 1994). Leonard-Barton (1992) mentions, "recurring shortfalls in the process are often traceable to the gap between current environmental requirements and a corporation's core capabilities. Due to environmental change, core competencies become core rigidities; and deeply ingrained values, skills, managerial systems, and technical systems that served the company well in the past become increasingly inappropriate sets of knowledge".

Bartlett and Ghoshal (1994) indicate the “organizational context is created and renewed through tangible and concrete management actions”. Due to previously mentioned changes in the world although not only the organizational context and work concepts are changing, but the roles and relationships of management and knowledge worker within the organization are changing as well (Bartlett and Ghoshal, 1993, 1994, 1995a, 1995b, 2002; McKinsey, 2007; Malone, 2004; Rubery, 2002). Traditional concepts like top-down management and management control are increasingly questioned and substituted by new practices like bottom-up management, servant-leadership and/ or self-steering teams (Nonaka et al., 2006; Malone, 2004) and knowledge workers are increasingly empowered. The reasons mentioned being the greater power in the organizational relationship and demand for self-actualization and meaning. But secondly, empowered employees are believed to increase productivity. The research shown in the first chapters of this report corroborates this thought and shows that from 34 knowledge work context dimensions not only empowerment competence ( $\beta=0,32$ ; 0,46; 0,30) and empowerment impact ( $\beta=0,14$ ; 0,20; 0,17) highly correlate with productivity. But, as a very striking result, these 2 dimensions are the only ones out of 34 that correlate with productivity throughout all 3 case organizations.

This affects how and by whom this new organizational context is created. The main objective of this research therefore is to follow a unique case where Microsoft alters its organizational context and work concepts; from the moment top management decides to adjust the organizational context and work concepts, to the design of strategic change programs, to implementation. The aim of doing this is to define in what way the creation of this new organizational context and work concepts is influenced by managerial strategic roles and actions. And secondly, what strategic roles and actions are executed by knowledge workers in today’s knowledge worker organizations.

#### Managerial Objectives

This study provides management the possibility to better understand current practices of strategic organizational change, in specific the creation of a new organizational context and new work concepts in a knowledge worker organization. It does this by providing a theoretical analysis of a strategic change happening at an identifiable and respected company. By linking practice to academic research this provides a different and interesting angle to look at what happens in today’s reality and how such change can be implemented even more successful in the future, as it is possible to integrate lessons learned from this case.

Secondly, the insights created in this research can be used to better understand the current role of management and knowledge worker in the different phases of creating a new knowledge worker context and new work concepts and what actions they perform, i.e. what interventions are created by whom and why.

Furthermore, the study provides insights into a whole set of typical characteristics of the change process. It shows which group within the organization (top management, middle management or front-line knowledge worker) takes leadership in the change process at what



time. It as well portrays what expectations throughout the organization exist into what roles should be played by whom and what actions should be executed.

In addition, this study draws attention to a different view of change, not top-down, not bottom-up, but a change that is co-created by top management, middle management and the front-line knowledge worker in social- and virtual interaction processes. In a world where front-line knowledge workers are a scarce resource and possess the capital of the firm, and where empowerment is recognized to be the main contributor to increasing productivity (results from previous chapters) understanding these processes seems to be crucial. Furthermore insights into these topics can be helpful in developing managerial- and knowledge worker training. Empowerment is still a balancing act of letting go and control; managers still often find it difficult to let go, some knowledge workers are not yet ready for the increase in freedom, since responsibility comes along.

In the case study development of workshops, narratives, designed interventions and ideology of the change management process have been taken into account. Furthermore the case study provides insights into currently developed interventions to guide the change like workshops, narratives and ideology and therefore provides managers with knowledge about what kind of change interventions are created, how they have been created, by whom and why. This sheds light on how new knowledge creation and processes of sensemaking and sensegiving spiral through the organization and through the different groups during the change.

Last but not least, it is believed that managers, entering the strategic organizational change process of creating a new knowledge worker organizational context and new work concepts, after having read this study, will feel more confident about the challenge ahead and this study therefore can inspire them to start.

#### Research Design

The methodology and methods used in this study belong to the area of qualitative research. According to Stake (1980) a qualitative research design is ideally situated for the purpose of adding to the body of existing knowledge, the aim of this research. It does because this kind of research enables an in-depth and specific understanding of the experiences and interpretations of people and offers the researcher a way to understand how people view things and why (Eisenhardt, 1989). To support answering the research questions of this study it was especially important to understand the interpretations of people within the case-study company as the research topics of this study, the roles and actions of management and knowledge worker and the new organizational context and work concepts were only rarely explicitly written down and/ or formalized, subject to change during the research and could therefore only be extracted by observation and interviews.

A single-case study design was used. Yin (1994) defines a case study as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident”. Eisenhardt (1989) indicates that the case study approach is characterized by its focus on “understanding the

dynamics present within single settings” and provides the opportunity to analyse “information too difficult or expensive to quantify, such as subjective opinions and value judgements, typically unearthed during interviews” (Eisenhardt, 1989). Although a single-case study design was used several other companies have been visited and many comparisons were found of the same processes taking place at these companies.

The research started with a literature review, observations of meetings, events, change intervention development sessions and the current organizational context and several interviews. These observations and interviews subsequently guided further literature review. Based upon the literature review, observations and interviews a theoretical framework was developed to structure analysis of the observations and change process over time and different roles and actions of 3 layers within the organization; top management, middle management and knowledge workers. After reviewing existing literature and the results from the case analysis a semi-structured interview guide will be developed to enable retrieving the last information to fill the gaps that still exist before the research question of this study can be properly answered.

#### **4.6.2 Literature Review**

It is important to delineate in advance the borders in which research takes place. “Contextualization makes theoretical models more accurate and interpretation of empirical results more robust” (Inkpen and Dinur, 1998).

The literature overview of this study includes research on work styles and on the knowledge worker organizational context and its dimensions, especially the mental context. Also it will provide an overview of previous literature about the roles and actions of management and knowledge workers during change and the impact of empowerment on the change of these roles.

Within this study the literature review phase is not yet completely finished. For this reason a summary will not yet be presented in this report, but at a later stage. The initial conceptual model is presented in Figure 31.

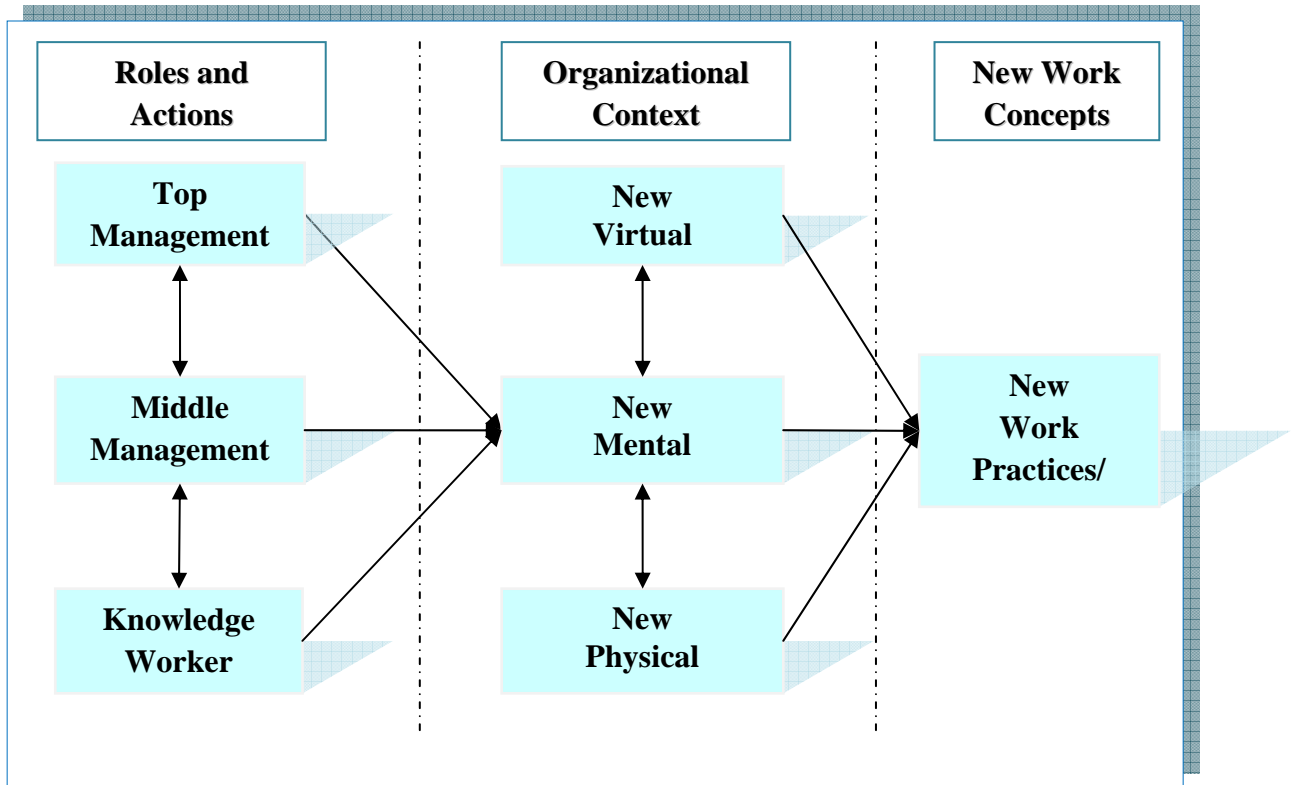


Figure 31: Conceptual Model Roles and Actions in Creating A New World of Work and New Work Concepts

#### 4.6.3 Methodology

##### *Sample Description and Procedure*

The data interpretation process was carried out simultaneously with the data collection and review of literature over a period of 15 months (Feb 2007 – April 2008) and continues. Data are gathered over time in an iterative process of triangulating literature, observations and interviews in an ethnographic research design. “The ethnographer typically enters a new cultural (organizational) domain with little familiarity about its inner workings. By trying to suspend *a priori* assumptions, the researcher attempts to understand the social world by first discovering the conceptual lenses that the members of the organization use to see and interpret their experience”, (Gioia and Chittipedi, 1991).

The company events and meeting attended for this research were 37 in total; including 3 company events, 7 “2bPR” kick-off meetings, 7 physical-, mental- and virtual meetings, 13 steering group meetings, 2 people manager meetings, 1 MT meeting, 2 MT dialogue sessions and presentations of Steve Ballmer and Kevin Turner. Furthermore several research meeting were attended, 3 with Microsoft experts and 3 with other companies engaging in the same processes as Microsoft in adjusting the knowledge worker organizational context and work concepts.

Initial interviews were done to better grasp the individual thoughts of Microsoft employees concerning the change and to further refine the direction of the research. In total 7 of these

initial interviews have been executed. In this research the interviews that have been done and will be done are a mixture between the interviews guide approach and the standardized open-ended interview (Patton, 1990). Before the interview, interview protocols were set up with pre-defined questions. Asking all questions in a systemized way was believed to provide the best results for filling in the gaps of the conceptual framework and to ease the analysis of the answers. In the first set of interviews although it was noticed that sometimes a deviation from the standardized protocol was necessary to keep the interview informal and relaxed. It was also noticed that valuable insights were sometimes given by participants with certain knowledge if there was probed for more in-depth answers. These insights will be taken to the development of the interview guide for the last interviews held.

#### *Instrument Development*

For this research, it is believed that combining sense making and sense giving organizational change models (Balogun and Johnson, 2005; Gioia and Chittipedi, 1991) with the new knowledge creation theory (Nonaka and Takeuchi, 1995; Nonaka et al., 2006) provides an interesting theoretical lens able to guide the research at hand and to provide intriguing insights into the roles and actions of management during creation of new knowledge worker contexts and new work concepts over time. The research model is shown in Figure 32.

#### **4.6.4 Results empirical research/ Discussion and Conclusions**

This research has not yet been finalized. An overview of the final results of the empirical research will therefore be provided after finalizing this research.

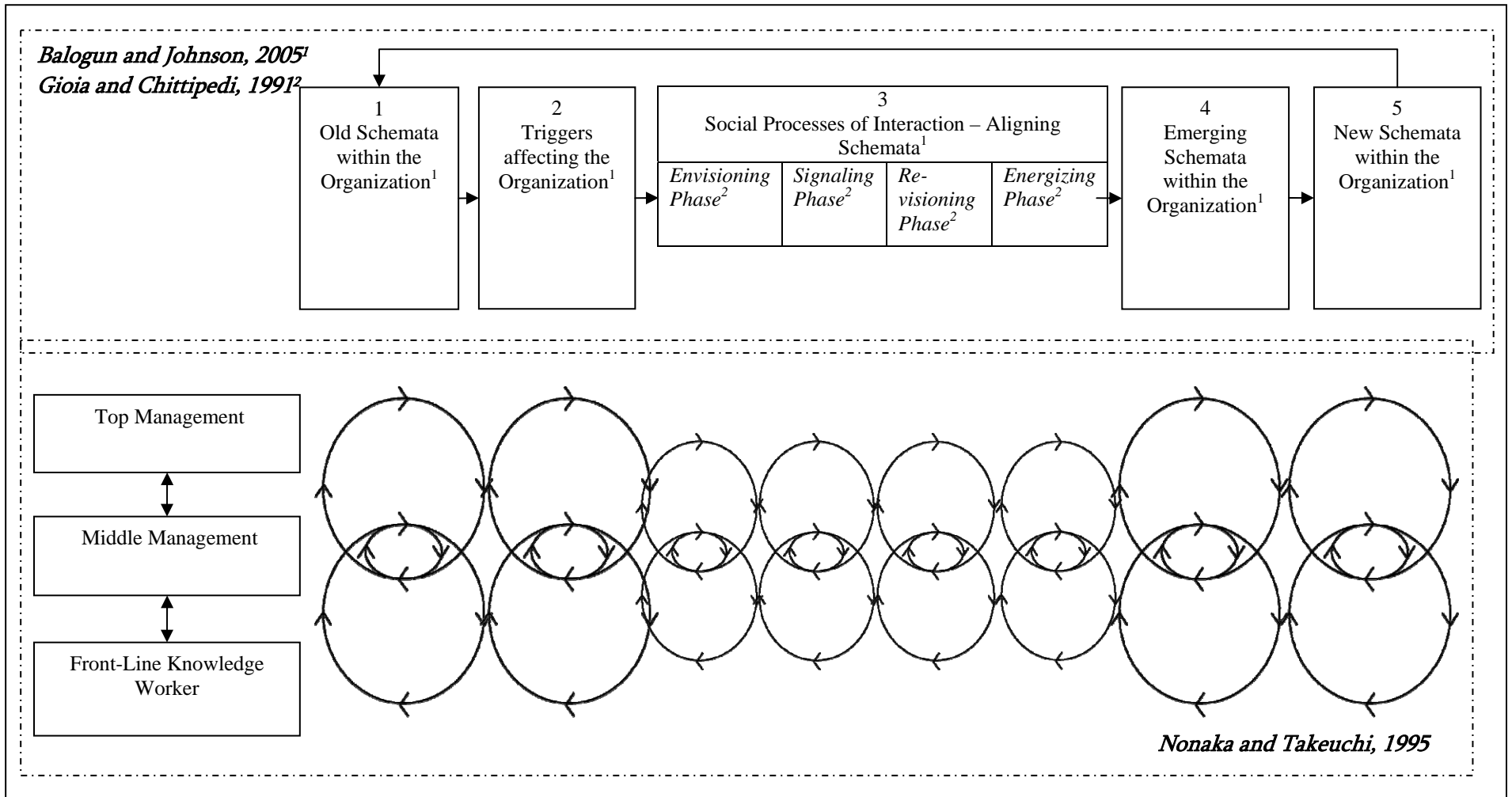


Figure 32: Research Model (Combination of Nonaka and Takeuchi, 1995; Balogun and Johnson, 2005 and Gioia and Chittipeddi, 1991)

## Chapter 5. Conclusions, Limitations and Future Research

### 5.1 Summary and Conclusions

This report presents and discusses the results of our research on knowledge work in three case organizations, Microsoft Netherlands, De Unie and Rabobank. At the start of this research Microsoft and Rabobank initiated new work concepts and they will move to another building. De Unie started to introduce new work concepts in 2003.

The report starts with pointing at the global changes that influence the nature of knowledge work. Knowledge work is no longer reserved to a small elite of experts but has diffused to all ranks in modern organizations. New dimensions of work have emerged in recent years. While the old dimension are strongly related to the nature of employee's tasks and motivation (the Hackman and Oldham model) the new work dimensions are more associated with relational and technological aspects of knowledge work. The most important new work dimensions are usage of new technology, mobility, transparency, collaboration within teams, empowerment, trust, and work-life balance.

The survey instrument integrates the old and new work dimensions. The survey results show that the three case organizations score moderate-high (3 – 5) on almost all old and new work dimensions. It means that new work dimensions are relevant to these organizations. The most important exceptions are workplace mobility and team distribution. De Unie and Rabobank scored significantly lower on these dimensions compared to Microsoft. These differences can mainly explain the differences in the business context [industry] in which the three organizations participate. The three case organizations gave relatively low scores on the workplace dimensions. This is an interesting finding as Microsoft and Rabobank are currently implementing new workplace strategies, while De Unie already has implemented new work concepts.

Summarizing the major findings across cases:

- The tasks the employees work on are quite interdependent, transparent, moderate complex, highly varied, and a large variety of skills are needed to accomplish these tasks.
- The employees are strongly intrinsically and rather strong extrinsically motivated.
- They feel strongly empowered
- They further appreciate the relationships with their colleagues and their superiors.
- They are quite prepared to change
- They use technology for different purposes and have a very positive attitude towards using new technology
- They are not very enthusiastic to workplace innovations

Next to this work dimension analysis we investigated how employee performances (employee satisfaction, productivity, flexibility, and innovativeness) correlated different aspects of work. What follows is a summary of our study results.

### **Employee Satisfaction**

Employee satisfaction is mainly influenced by the new work dimension, these are empowerment, trust in management, and satisfaction workplace. It is interesting to observe that no correlation was found with the well-known old work dimension task characteristics.

### **Productivity**

Productivity appears to be a particularly complex factor to measure, which may be explained by its perceived correlation with many different work aspects. Again, empowerment is positively influencing productivity. Task interdependency and transparency negatively influence productivity. In the case of Microsoft and Rabobank extrinsic motivation contributes to productivity.

### **Flexibility**

Job flexibility correlates strongly with new work dimensions, workplace mobility and with empowerment. Collaboration within the organization has a negative influence of job flexibility.

### **Innovativeness**

Innovativeness is closely associated with technology usage, empowerment, intrinsic motivation, willingness to change, and career encouragement. No correlations were found for the old work dimension task characteristics. New workplace factors have a negative impact on innovativeness.

On the basis of these general findings we can conclude that new work dimensions, which were the focus of our study, explain most of the variance in employee performances.

The case studies described the context of our survey findings and analyses the intricate processes of change with respect to the implementation of new work concepts.

## **5.2 Implications**

### **5.2.1 Theoretical implications**

Work has been studied for decades. However there is still no common template that can be applied to all types of work. Moreover the nature of work has been changing dramatically over the years. Research templates need adapt to these changes. Management scholars appear to show little interest in researching the phenomenon of work. Some researchers (Shina and Van de Ven, 2005; Barley and Kunda, 2001) critiqued this lack of interest and encourage management and organizational scholars to return to the frontier of organization science: work design. Through the initial steps taken in this study we heed their 'call'.

In this study we focused on knowledge work. During our literature review we found that there was no research framework that addressed the old and new dimensions of (knowledge) work in a comprehensive way. We found support for combining old and new dimensions of work as the employees performances were explained by old *and* new concepts of work.

### 5.2.2 Managerial implications

The aim of the research was not to provide the management of the three case organizations with straightforward advice for interventions or with management tools to implement new work concepts in their organizations. Rather our aim was to reflect on their actions and to provide them with information that might serve as a mirror to their practice. Moreover the results served as boundary objects between the academic and the business world. The research results were not always unambiguous and needed interpretations by the researchers and those responsible for introducing new world concepts. We hope that this dialogue shall contribute to a better understanding of their practice.

### 5.3 Limitations

Any research has limitations. So does ours. The first is that the research is limited to three case organizations that differ in many respects. These differences may explain the differences we found between the three organizations. The second is that we did not start from a theory. We selected validated work dimensions from a large number of work design studies that were thought to be relevant for knowledge work. However, upon retrospect, this research approach played an important role, in that it helped us to develop a theory on knowledge work in the near future. A third limitation is that no cross relationships are investigated. For example, we have defined satisfaction as a dependent variable but within a broader theoretical model it probably will turn out to be an intermediate variable.

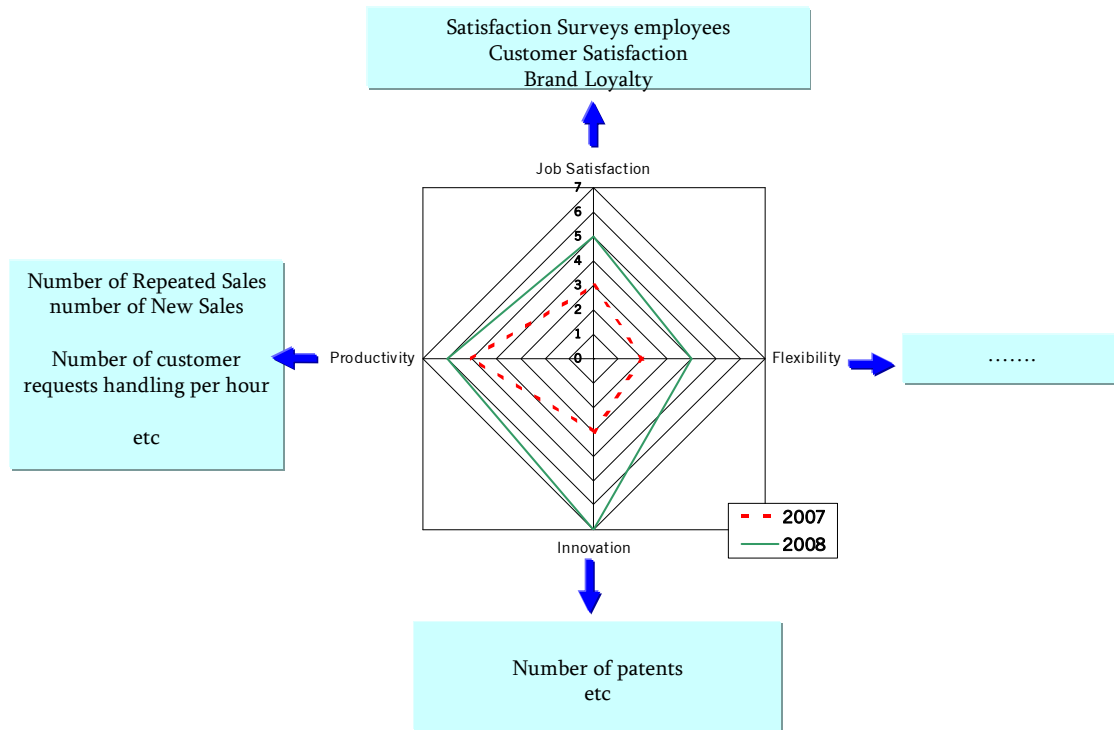
### 5.4 Future Research

#### *Measurements with NWoW framework*

The pre measurements will be followed up with post measurements with the NWoWf questionnaire. This way we can assess the effects of managerial interventions in relation to NWoW implementations on the different output dimensions. Furthermore, we can analyze how perception on independent variables and correlation between dependent - and independent variables changes after introduction of NWoW concepts. For this we need to compare results of scores of the dependent variables and analyse and describe in a structured way the interventions which were taken by the company between the 1<sup>st</sup> measurement and the 2<sup>nd</sup> measurement. Furthermore, in future research we intend to investigate cross relationships between dependent variables and between independent variables.



*Extension NWoW framework perceptual measurements with objective organizational measures*



We intend to extend our analyses of the effects of NWOW implementations based on comparison of objective measures, at the time of writing, yet to be defined. Examples of such metrics are number of sales, brand loyalty, number of patents etc. The type of metrics to assess the effects will be most probably company and/or industry specific.

*Extension level of analysis NWOW to business network*

Implementing NWOW concepts can have profound requirements and effects on the business network of a company i.e. its relationships with partners and customers. Effects of NWOW on output factors on individual knowledge worker level also apply to a certain degree to output factors on business network level (productivity and satisfaction of customers and partners). Furthermore, NWOW can be the enabler for the development of new products and services and new orchestration of the business network processes.

To analyse these dynamics and potential of NWoW we will develop a measurement instrument and apply this in a number of cases, at the time of writing, yet to be defined (business networks or partnerships). We would like to analyze the effects of NWoW on different output variables for different positions in the network (supplier position, intermediary position and in direct customer facing processes and services).

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## APPENDICES

## APPENDIX A: Perceived Organizational Performance

Variables and items	Organizations		
	InSure	CommerCe	BanCo
<b>Perceived organizational performance*</b>			
How would you compare the organization's performance over the past 3 years to that of other organizations that do the same kind of work? What about ...			
Quality of products, services, or programs?	3.5	2	3
Development of new products, services, or programs?	2	3	3
Ability to attract essential employees?	3.5	3	2
Ability to retain essential employees?	3	3	2
Satisfaction of customers or clients?	3	2	2
Relations between management and other employees?	3.5	4	2
Relations among employees in general?	3	4	2
<b>Average perceived organizational performance</b>	<b>3.1</b>	<b>3.0</b>	<b>2.3</b>
Compared to other organizations that do the same kind of work, how would you compare the organization's performance over the last 3 years in terms of ...			
Marketing?	2	na	2
Growth in sales?	3	na	2
Profitability?	3.5	na	1
Market share?	3	na	3
<b>Average perceived market performance</b>	<b>2.9</b>	<b>na</b>	<b>2.0</b>
<b>Strategic Flexibility**</b>			
On the scale provided, please indicate the extent to which it is easy for your firm to ...			
Make changes in the services offered	4.5	5	5
Switch focus to different targets/markets	3.5	5	5
Apply resources to a wide range of uses	6	6	6
Switch the uses and applications of resources	4.5	7	6
Modify services to offer different benefits	5.5	4	4
Make fast changes in how resources are used	4.5	6	4
<b>Average perceived strategic flexibility</b>	<b>4.8</b>	<b>5.5</b>	<b>5</b>
* Scale: 1 'worse', 2 'same', 3 'better', 4 'much better'			
Source: Adapted from: Delany, J. T., & Huselid, M. A. 1996. The impact of human resource management practices on perceptions of organizational performance. <i>Academy of Management Journal</i> . 39: 949-969.			
** Scale anchors 1 = not at all, 7 = very easy			
Source: Adapted from: Saini, A. and Johnson, J. (2005) 'Organizational Capabilities in E-commerce', <i>Journal of the Academy of Marketing Science</i> 33(3): 360-75.			

## APPENDIX B: High Performance Workplace Technologies

### Presence of High Performance Workplace practices

High Performance Workplace practices	Most added value Enterprise Architecture phase	Organizations		
		InSure	CommerCe	Banco
Workplace enhanced business applications	4	1		2
Podcasting	3			2*
Ubiquitous Collaboration	4	1		1
Desktop Portals	3	1		2*
Text Mining	?			2*
Collective intelligence	4		2	2
Corporate Semantic Web	3			2
Mashup	4	1		2
Basic content services	2	1	1	2
Desktop Search	3	1	2	1
Content integration	3	1		2*
<i>Folksonomies</i>	3			
Smart Enterprise Suites	3			1
Open-Source Tools for Web Content Management	?	2	2	
Web 2.0 Workplace Technologies	?	2	2	1
<i>Social Network Analysis</i>	?			
Unified Communication	4	1		1**
<i>Linux on Desktop for Mainstream Business Users</i>	?			
Desktop Video	4	1		2
Automated Text Categorization	3			2
Wikis	3	1	2	2
Corporate blogs	?		1	2
E-learning Suites	?	1	2	2
Public Semantic Web	4			2
Natural-Language search	3	1		2
Enterprise Digital Asset Management	3	1	2	1
Expertise Location and Management	4	1	1	2
E-forms	3	1	2	1
Records Management	2	1	1	2
Enterprise Instant Messaging	3	1		1
Shared workspaces	4	1	2	1
Unified messaging	4	1	2	2
Enterprise Portals	3	1	1	2
Taxonomy	3		2	2
Web Conferencing	3	1		2
Enterprise Content Management	3	1	2	2
Multimedia Messaging Service	3	1	2	
Presence	3	1		2
Knowledge Management	3	1	1	2
Web Content Management	2	1		1
<b>Total current HPW</b>		<b>27</b>	<b>6</b>	<b>10</b>
<b>Total future HPW</b>		<b>2</b>	<b>13</b>	<b>25</b>
<b>Most HPW from</b>		<b>3</b>	<b>3</b>	<b>3</b>

Scale:

1) Used

2) Will be used in near future

\* No decisions have been made whether the hpw will be implemented

\*\* Partially used

APPENDIX C: Enterprise Architecture Maturity

Management practices	Mark the most applicable answer (X)				Explanation
	Used in the organization	Will be used in organization in the near future	Heard of, but not used in organization	Never heard of	
Business cases					Accurate and compelling analyses of the expected costs and benefits of a proposed change to a business process or technology
Standardized project methodology					A disciplined, consistent approach to converting an approved project concept into an improved business process
An IT steering committee					A small group of executives held accountable for determining IT priorities
Centralized funding of enterprise applications					Capital budget allocations supporting implementation of enterprise-wide standards
An infrastructure renewal process					A funding mechanism for projects intended primarily to retire aging technologies and upgrade the technology base
A formal architecture compliance process					A process for ensuring new projects are adopting standard technologies
Architects on project teams					Individual responsible for ensuring that technical standards are observed or that necessary exceptions are adopted
An architecture exception process					A formal process for identifying when exceptions to standards add value
A centralized standards team					Technical experts who identify appropriate standards and recognize when to retire or update those standards
Enterprisewide process owners					Individuals who own, design, and implement one or more enterprisewide processes
A statement of enterprise architecture* guiding principles					Though choices specifying how IT will be applied in the company (e.g., to serve customer interests versus to cut business process costs)
Business leadership of project teams					High-level managers accountable for generating expected benefits and actively involved in project management
Senior executive oversight of enterprise architecture					High-level reviews of enterprise architecture initiatives and design of incentives to encourage adoption
IT program managers					Individuals who coordinate systems and projects to map integration and minimize redundancy
A one-page core diagram					A tool that communicates a high-level picture of integration and standardization requirements
Postimplementation assessment					A formal process for securing and communicating lessons learned from each project
A formal research and adoption process					A process for identifying the new technologies that could have a significant on the company
A full-time enterprise architecture team					IT staff who help fit immediate business needs into the company's longer-term vision

## APPENDIX D: Enterprise Architecture Maturity: Empirical Results

## Define the Enterprise Architecture maturity

Stage	Management practices	Organizations *		
		InSure	CommerCe	BanCo
<b>1 Business Silos</b>	Business cases	1	1	1
	Standardized project methodology	1	1	1
<b>2 Standardized Technology</b>	An IT steering committee	1	1	1
	Centralized funding of enterprise applications	1	3	1
	An infrastructure renewal process	1	3	1
	A formal architecture compliance process	1	3	1
	Architects on project teams	1	3	1
	An architecture exception process	1	3	1
	A centralized standards team	2	1	1
<b>3 Optimized Core</b>	Enterprisewide process owners	1	3	1
	A statement of enterprise architecture guiding principles	1	4	1
	Business leadership of project teams	1	1	1
	Senior executive oversight of enterprise architecture	2	3	1
	IT program managers	1	1	1
<b>4 Business Modularity</b>	A one-page core diagram	2	4	1
	Postimplementation assessment	1	3	2
	A formal research and adoption process	3	4	1
	A full-time enterprise architecture team	1	4	1
<b>Enterprise Architecture maturity phase</b>		<b>4</b>	<b>1</b>	<b>4</b>

\* Scale:

- 1) Used;
- 2) Will be used in near future;
- 3) Familiar with, not used in company;
- 4) Not familiar with

Source: Adapted from Ross, Weill and Robertson (2006) *Enterprise Architecture as Strategy*. Boston, Harvard Business School Press