Aleksi Horsti

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Abstract

For centuries, it has been acknowledged that after major technical innovations, there exists a business opportunity for turning innovations into businesses. Similarly, the very same has happened when the opportunities of electronic business based on the Internet were identified over a decade ago. In the late 1990s, the business model concept appeared to describe a business logic according to which electronic businesses were typically described in brief and put into practice. Meanwhile, several daily business magazines reported success stories of electronic business models, drawing the attention of investors and stock markets. Soon after this phenomenon, researchers developed an interest in gaining a better understanding of the business model concept by defining the concept, listing various business models, and identifying the underlying constructs of the business model concept. Still most of the business model research has focused mainly on the static constructs of the business model concept instead of studying the dynamic nature of a business model. The purpose of this dissertation is to study the evaluation of electronic business models and their dynamic nature.

This dissertation is in essay format, combining five papers that all discuss electronic business models and their evaluations. The first two papers of the dissertation study the most essential success factors related to the evaluation of electronic business models. The first paper proposes an evaluation tool for electronic business models based on interviews and literature review. The evaluation of business models is crucial in setting and defining the goals and objectives for a business model, in comparing the business model to the competitor's models in the market, in improving and enhancing the business model along the life cycle of the model, as well as in proving the success of the business model according to specific measurements. The second paper continues from the first paper by testing the evaluation tool by means of a survey. Portal business models are studied in the third paper. The paper focuses on a portal management model that is based on a life cycle model. The aim of the paper is to guide Scandinavian portal managers in their every-day decisions. The fourth and fifth papers continue exploring the evaluation tool of electronic business models based on survey data. The fourth paper

studies the behavior of success factors in various life cycle stages, whereas the fifth paper concentrates on the offering component of an electronic business model.

For researchers, the dissertation reviews the most relevant business model literature and provides an evaluation tool for electronic business model research. The evaluation tool is a starting point for future research on electronic business model success. Furthermore, the offering of a business model and the management of Internet portals are studied. The dissertation is also valuable for practitioners, such as investors, consultants, as well as decision-makers and managers within electronic commerce or traditional companies. The study describes a business model and presents the most crucial success factors of a business model in the context of electronic business. In addition, the research provides understanding of the concept of a business model by positioning the concept among the other concepts of management, marketing, and organizational sciences.

Finally, the dissertation offers guidance and avenues for conducting further research on the topic of electronic business models that seems to be justified and requested by several researchers (e.g., information management science).

Keywords: Electronic Business, Electronic Commerce, Internet, Electronic Business Model, Success, Critical Success Factors, Life Cycle Model

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My experience is that the environment at HSE (Helsinki School of Economics) is characterized as cooperative, and people are always willing to give their comments on your research. Professor Markku Sääksjärvi introduced me to the research work in the area of information system science. He offered me an opportunity to take part in the research project called Vertico in which I wrote my first working paper relating to the basics of the business model concept and essential frameworks published in the field. Professor Timo Saarinen and Professor Matti Rossi have actively commented on all the research plans and papers I have presented to them. They have always been ready to give recommendations and solutions to the actual challenges. Professor Pekka Korhonen has always found the time to discuss and propose proper statistical methods, according to which the results of several papers were drawn. In addition, Professor Merja Halme thoroughly guided me with the statistical analysis tools. Also, Professor Markku Kallio has helped me to continue and believe in my research with all his positive and constructive comments during the past years. From HSE, I would also like to thank my fellow PhD students. Esko Penttinen has especially been a great colleague to work with during the past year. He also has had time to read and comment on some of my final papers. Moreover, I also want to express my thanks to PhD Tuure Tuunanen for giving advice that has helped me to enhance this research. Also advices and training at GEBSI (Graduate School for Electronic Business and Software Industry) seminars was a helpful support shared by invited Finnish and international researchers.

I also want to express my appreciation and gratitude to Professors Jussi Puhakainen from Turku School of Economics and Ada Scupola Hugger from Roskilde University, who have been my official dissertation examiners. Their insightful comments and suggestions have been helpful during the final stages of the thesis. I would also like to thank Erin Kärkkäinen for proofreading the final draft.

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Without the time and cooperation of the companies who participated in the empirical part and data gathering, the research could not have been accomplished. I would like to thank all the anonymous interviewees for their ideas and trust that has enabled this research. I'm also grateful to all the respondents who gave their time to answer the survey questionnaire.

During this five-year journey, I have been surrounded by wonderful colleagues, friends, and relatives, who have supported me in their own personal ways. I am grateful to everyone who has shown an interest in my research process. I would especially like to

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Helsinki, 11th March, 2007

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PART I: OVERVIEW OF THE DISSERTATION

1. Introduction

In this section, the background of the study is presented and objectives of the study are defined. The introduction also describes a research structure for the study, prescribing theories and concepts on which the study is based. Finally, research approaches are presented.

1.1 Background of the study

Throughout history, new technology has generated new business opportunities through an incremental or radical innovation (Schumpeter, 1934). This also holds true in the Internet era. During the last few decades, electronic business has become one of the main topics discussed among researchers and business practitioners. This discussion does not only apply in the case of the Internet hype, but also in terms of business opportunity, competitive advantage, and the era of potential profitability. Information technology, especially the Internet, is having a dramatic impact on business operations (DeLone and McLean, 2003). Electronic business offers various possibilities for companies reaching out for better revenues, efficiency, and competitive advantage over their competitors.

Porter (1980) has a realistic opinion in determining that profits cannot be supranormal because it would encourage other firms to enter and drive down prices. McFarlan (1984) presents how technology enables competitive advantages for a company. The competitive advantages are achieved, for instance, by building a barrier to the entry of a competitor, creating switching costs for a customer, or changing the way to compete in the current industry. Hitt and Brynjolfsson (1996) agree with Porter (1980), finding evidence in their research that information technology (IT) may increase the productivity and customer surplus but not necessarily lead to supranormal business profits. Evans and Wurster (1997) argue that IT enables the disintermediation of the

value chain since technologies have changed the way organizations are doing business. Venkatraman and Henderson (1998) strongly state that current business models based on the industrial economy are questionable in the age of information revolution. Porter (2001) has a more neutral point of view in saying that the Internet technology provides better opportunities for companies to establish distinctive strategic positioning compared with previous generations of IT. Porter (2001, 73) continues: "...the Internet complements, rather than cannibalizes, companies' traditional activities and ways of competing."

Whereas electronic business has been an interest area of several researchers for the recent decades, business model research appeared only a decade ago. Timmers (1998) was one of the first authors to define the business model concept and identify the key taxonomy of the concept. Also, Venkatraman and Henderson (1998) define business model as a coordinated plan to design strategy along three vectors: customer interaction, asset configuration, and knowledge leverage. Meanwhile, the term "business model" was mainly used to describe the success stories of start-up companies in the daily business news. After this, the business model became a regularly used term among investors. At the same time, research around the business model concept was about to take its first steps when the definitions and listings of the business model concept evolved.

In this dissertation, the concepts of electronic business and business model are put together after which we discuss electronic business models (e-business model). In e-business models, IT and electronic commerce are an essential part of the business model as stated by Weill and Vitale (2001). In addition, we are not only interested in the static nature of an e-business model and its components, but also its dynamic nature. Therefore, the evaluation of e-business models, as well as the movement and maturity of an e-business model according to its life cycle, are emphasized in the study.

1.2 Objectives

This dissertation concentrates on the evaluation of e-business models. The main focus is to study the characteristics of success in the electronic business context and based on these implications build an evaluation tool for e-business models. The objectives of this dissertation cover both the introduction part, as well as the original papers. The objectives are stated as follows:

1) To identify the constructs of an e-business model.

2) To develop an evaluation tool for the e-business models that is based on the critical success factors and life cycle model.

3) To validate the evaluation tool with empirical data.

This study aims to contribute to two research gaps. First, most of the studies discussing e-business models focus on the e-business model constructs, definitions, taxonomies, as well as components, instead of evaluating e-business models. After building any artifact, it is crucial to identify and continuously follow how it operates and succeeds. The evaluation of e-business models enables a company to measure the achievement of set goals and objectives, to develop an e-business model based on the results from identified strengths and weaknesses, and to enhance the competitiveness of an e-business model by comparing the e-business model to that of its competitors. Second, due to the lack of studies focusing on the evaluation of e-business models, this dissertation offers an approach for evaluating the e-business models. In the evaluation approach, the critical success factors and life cycle model are adopted to identify the most essential focus areas in which the management should concentrate on along the different phases of an e-business model's life cycle. The evaluation tool is based on data gathered both from the existing strategic management, marketing and organizational science literatures, as well as from the empirical data gathered from several companies in different industries.

1.3 Outline of the study

This dissertation includes two main parts. The first part is an introduction to the dissertation before the original papers which form the second part. The first part presents the background, objectives, and methodologies of the dissertation, as well as reviews the essential literature considering the theories and constructs on which the research in the original papers is based. Furthermore, the first part presents the research framework integrating all five papers. The first section also includes a short description of the studies and methodologies of the five papers, as well as the contribution and results of them.

The second part consists of the five papers, published either in the leading international conferences or journals of information systems science. The order of the papers follows the research structure presented in Figure 1.

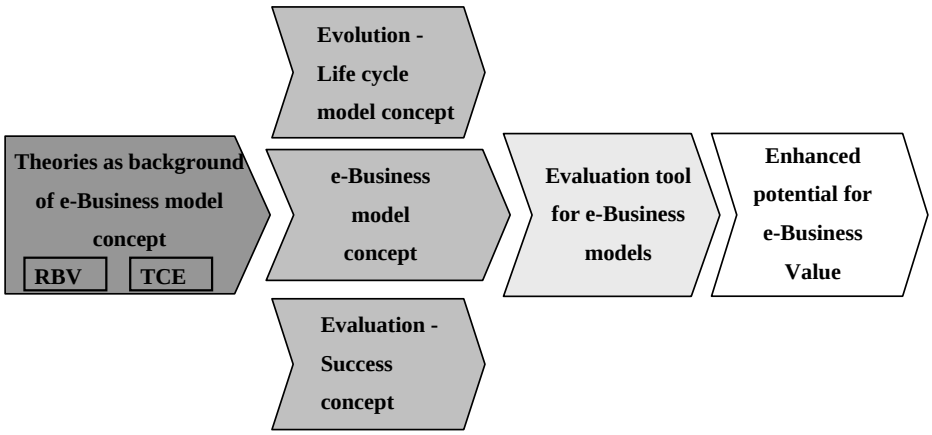


Figure 1. Research structure

The first paper (Horsti, 2006a) offers an overall literature review of the e-business model concept that is derived from the well-known and widely-adopted theories of strategic management and organizational sciences, including resource based view (RBV) and transaction cost economics (TCE). Other theories, such as agency theory, are not applicable in this research, since the unit of analysis of the agency theory is

inappropriate for the study. In the agency theory, the unit of analysis is a contract between principal and agent (Eisenhardt, 1989a), whereas the unit of analysis of RBV and TCE is a company. In addition, RBV and TCE cover interest areas of research explaining the nature of e-business models. The paper presents an evaluation tool for e-business models. The evaluation tool is constructed to contain two aspects of evaluation: the critical success factors (CSF) and life cycle model. CSFs represent the most crucial issues to which the management should focus its attention. Furthermore, due to the maturity of any business model along its life cycle, the focus areas may be different depending on the stage of a business model's life cycle. In the study, we gathered data adopting a qualitative research method, including the case study strategy, and we used interviews to collect data from selected case companies. The paper presents five cases from five different industries: travel, media, logistics, telecom, and paper. In each case, the success factors are identified, and the description of each e-business model case is given.

The second paper (Horsti, Tuunainen and Tolonen, 2005) is based on the first paper, utilizing the evaluation tool of e-business models. The paper reports on a study in which we gathered empirical data with quantitative methods, including a survey of 60 Finnish companies and 111 business units. Based on the results, we were able to prioritize the list of success factors needed in the evaluation tool of e-business models. In addition, an analysis regarding the different types of customers (business-to-business or business-to-consumer) and competitive strategies (cost leadership or differentiation) of an e-business model was conducted to compare these e-business model's contextual characteristics to the results derived from the weightings of CSFs.

The third paper (Damsgaard, Horsti and Nilsson, 2004) comprises six portal business models in three Scandinavian countries: Denmark, Finland, and Sweden. In the study, the portal business models are either mobile portals or healthcare portals in each country. The paper compares different portals and presents results based on the PMM (portal management model). The aim of the PMM is to guide the management of online portals to acknowledge the main guidelines and strategies at each stage of a portal's life cycle. The research is performed using qualitative research methods. Interviews with the

management of each portal were conducted to gather experiences from the portals and to validate the PMM in the context of Scandinavian online portals.

The fourth paper (Horsti, 2006b) presents more detailed views on the life cycle model as a part in evaluating the e-business models. In this paper, we utilized the same survey as presented in the second and fifth papers. However, the life cycle stage data and analysis were derived from the second part of the survey, whereas the other two papers derived data from the first part of the survey questionnaire. The fourth paper provides evidence that the stage of an e-business model's life cycle has a significant effect on the set of CSFs. The CSFs seem to change in the different stages of the e-business model's life cycle.

The fifth paper (Horsti, Penttinen, Saarinen and Korhonen, 2006) focuses on examining the CSFs related to a market offering that is defined as one component of the business model concept. Moreover, we are interested in investigating the relationship between CSFs (as an independent variable) and e-business profitability (as a dependent variable) in a certain context (as a contextual variable). The used empirical data is identical to the data utilized in the second paper, but new variables are created to serve the research problem.

2. Theoretical background of the study

In the following, theories and concepts comprising the backbone of the study are reviewed. First, the electronic business model concept is based on two theories: resource based view and transaction cost economics. Second, the electronic business model concept is presented. Finally, the evaluation concept utilizing life cycle model and critical success factors is discussed.

Overall, electronic business covers all parts of the theoretical background of this study. According to the definition by Kalakota, Oliva and Donath (1999), electronic business refers to the business models built around networking technologies. Turban, King, Lee and Chung (2002) continue by stating, more specifically, that electronic business is not limited to buying and selling of goods and services, but also includes serving customers, collaborating with business partners, and conducting electronic transactions within an organization. Weill and Vitale (2001) also have a broad view of the electronic business, defining that it is the conduct of business and business processes over computer networks based on non-proprietary standards. We can conclude that electronic business links all parties of any business model, within any industry, in its business environment and value chain with an electronic networking technology, such as the Internet.

2.1 Resource based view and transaction cost economics as theoretical background

An essential part of any electronic business model is a product or a service (i.e. output) that is produced by utilizing the firm's resources (i.e. input). At this point, resource based view theory can be applied. In addition, produced products or services need to be exchanged between different business parties before generating any revenue. Here we can utilize the theory of transaction cost economics. In this study, we integrate these two well-known approaches as theoretical lenses in the context of electronic business models despite some conflicts between the two theories, but the strong complementarities between them should not be ignored (Silverman, 1999).

First, according to RBV, a firm's performance is based on its resources, and these are difficult to imitate by its competitors (Zhuang and Lederer, 2006). The theory states that the resources and performance of a company are linked in a way that the "unique" resources and skills are firm-specific, valuable, rare, and difficult to imitate or substitute (Barney, 1991). In addition, the RBV operates under the assumptions that the resources needed to conceive, choose, and implement strategies are heterogeneously distributed across firms and that the differences in the firms remain stable over time (Barney, 1991). Second, Coase (1937) identified a point where the costs of organizing an extra transaction within the firm becomes equal to the costs of carrying out the same transaction by means of an exchange in the open market or the costs of performing the same activity in another firm. Williamson (1975) continued developing the theory of transaction cost economics by classifying transactions into two categories: hierarchies and markets. The central issue in transaction cost economics is the concept of transaction costs, including the effort, time, and costs incurred in searching, creating, negotiating, monitoring, and enforcing a contract between buyers and suppliers (Mahoney, 1992). In the information technology context, researchers have focused on the ways in which investment in IT can reduce transaction costs and transaction risks (Clemons and Row, 1992).

Both theories have their strengths and shortcomings. First, RBV and TCE face challenges since they are too static and slow in the context of new economy. In relatively stable markets, managers can rely on complicated strategies built on detailed predications of the future, but in complicated and fast-moving markets where significant growth and wealth creation can occur, unpredictability reigns. According to Eisenhardt and Sull (2001), the most profound strategic implication of the new economy is that companies must capture unanticipated opportunities in order to succeed. Rather than picking a position or leveraging a competence, managers should select a few key strategic processes and craft a few simple rules to guide them. In addition, RBV is challenged in an electronic business model environment with information-based resources, which have a higher degree of mobility than other types of resources, increase in their importance within electronic business models, value migration is likely to increase, and the sustainability of newly-created values may be reduced. Second, in

the TCE, the emphasis of transaction cost efficiency may divert attention from other fundamental sources of value, such as innovation and the reconfiguration of resources (Ghoshal and Moran, 1996). Third, the governance models related to TCE (other than hierarchies and markets such as joint ventures) receive relatively little attention, which contrasts with the importance of strategic networks (Jarillo, 1995) in electronic business models. For instance, a short-term or a long-term cooperation based on trust should not be ignored. Finally, in the case of firm's growth the two theories are conflicting. RBV permits firms to share resources and thereby overcome resource-based constraints in inter-firm cooperation (e.g. Hamel, 1991). According to TCE, cooperation is advisable only if it minimizes the cost of governance (i.e. monitoring and controlling) which, in turn, maximize performance. For example, in a dilemma of resource-poor firms the RBV points them toward cooperation whereas TCE discourages cooperation.

Studies have also an interest to integrate principles from TCE into the predictions of RBV concerning diversification (e.g. Silverman, 1999). Silverman (1999) disproves the common assumption that rent-generating resources are too asset specific to allow contracting by finding certain circumstances where resources can be exploited through contracting rather than through diversification. He reports that firms are more likely to diversify into an industry, the more applicable its technological resources are to that industry. In other words, firms diversify to markets where they can exploit economies of scope in technological resources, in accordance to the RBV of the firm.

2.2 Electronic business model concept

In this section, the origin of the term “business model” is viewed. In addition, the role of business model is presented among other concepts of management and organizational science. Definitions, similarities, differences, and taxonomy for the terms “business model” and “e-business model” are also discussed.

2.2.1 Origin and appearance of the term "business model"

According to EBSCO (a worldwide literature database), the term "business model" was adopted for the first time in the context of business games used in management trainings (Bellman, Clark, Malcolm, Craft and Ricciardi, 1957). In the 1960s, 1970s, and 1980s, the term "business model" was almost completely unknown and only occasionally used.

In order to study the background of the business model concept, we used the discourse method presented by Abrahamson and Fairchild (1999). According to this method, the number of articles published, where a specific term of interest appears, significantly indicates the prevailing management and academic discourse. We gathered all articles from 1957 to 2005 using Proquest and EBSCO literature databases and calculated the number of articles per year which included the term "business model" in the title or abstract of an article. Moreover, we distinguished the academic journals from the total number of articles and followed the ratio between them on a yearly basis. Figure 2 illustrates the appearance of the term "business model" in 1990-2005 and the curve between 1957 and 1989 is excluded since the number of articles is inadequate.

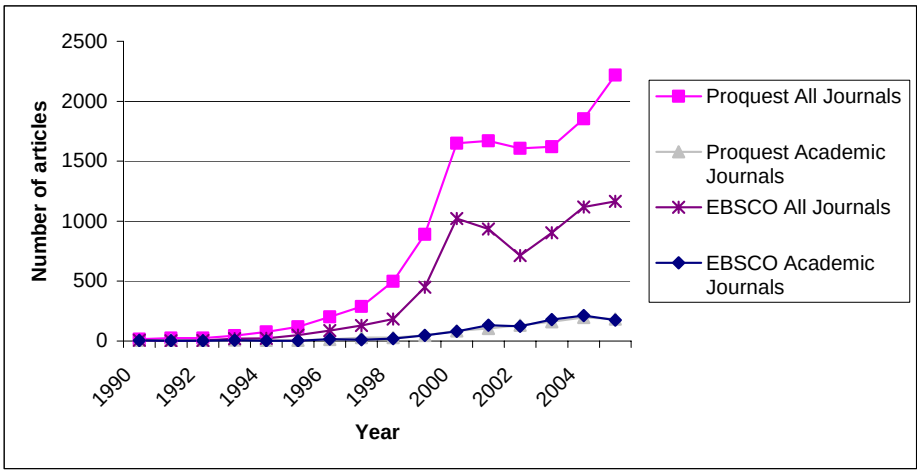


Figure 2. The number of articles including the term "business model" in the title or abstract

This discourse analysis gives evidence that the term “business model” is a frequently used term, especially in every day business news and nonacademic magazines. In the late 1990s, the usage of the term “business model” increased nearly at the same rate as the growth of the Internet hype, gaining its peak in 2000. At the same time, academic research around the blurred term was about to get started. Thus, the study indicates that business model research is not yet common in academic literature, and due to this fact a unified business model theory building is also scarce. In examining the ratio between the academic journal articles and all the articles, we find that the ratio doubled from the year 2000 to 2005 (e.g. EBSCO from 8 % in 2000 to 15 % in 2005), explicating that the term “business model” is used more in the academic journals compared to other sources, such as business magazines.

2.2.2 Business model's role in the company's business environment

The business model concept is firmly linked to the field of strategic management since the strategy defines the purpose, direction, and objectives of a business. However, according to Magretta (2002), a business model is not the same as a strategy. She raises a case example from the retailing industry to explain the difference between these concepts: The business models of Wal-Mart and Kmart are the same, but their strategies are different. Both companies follow the same business model (i.e. discount retailing), but from the very start Wal-Mart has chosen to serve a different customer segment in a different set of markets. Linder and Cantrell (2001) share the opinion with Magretta (2002) stating that a business model is not a substitute for the strategy by distinguishing the business model from the strategy concepts. Whereas a company’s business model guides and describes the day-to-day operation, strategy should tell how the company intends to change its model to take advantage of changing markets and new opportunities.

Concepts such as mission, strategy, and corporate planning evolved in the 1960s and the 1970s. They quickly became popular and widely used (see, for example, Ansoff, 1965). At this stage, we enter a vast field with numerous schools of thought, approaches, and techniques (see, for example, Mintzberg, Ahlstrand, and Lampel, 1998). These concepts seek to prescribe where the firm should be in the future; what it needs to do in order to

achieve the set goals; and what is accepted, important, and relevant. For example, Porter's (1980) concepts, competitive strategy, and strategic positioning are ways to define a company's high-level direction of its business and action.

The business model concept is relevant before moving from strategy down to the implementation of the defined strategy of a company. Osterwalder and Pigner (2002) place the business model concept between the strategy and process concepts. However, the aim of the business model concept is to be the missing link between the strategy and the processes. Also, the business system of a company obviously affects the direction and decisions made within that company, as well as its business model. The business environment surrounding the business model concept is presented in Figure 3.

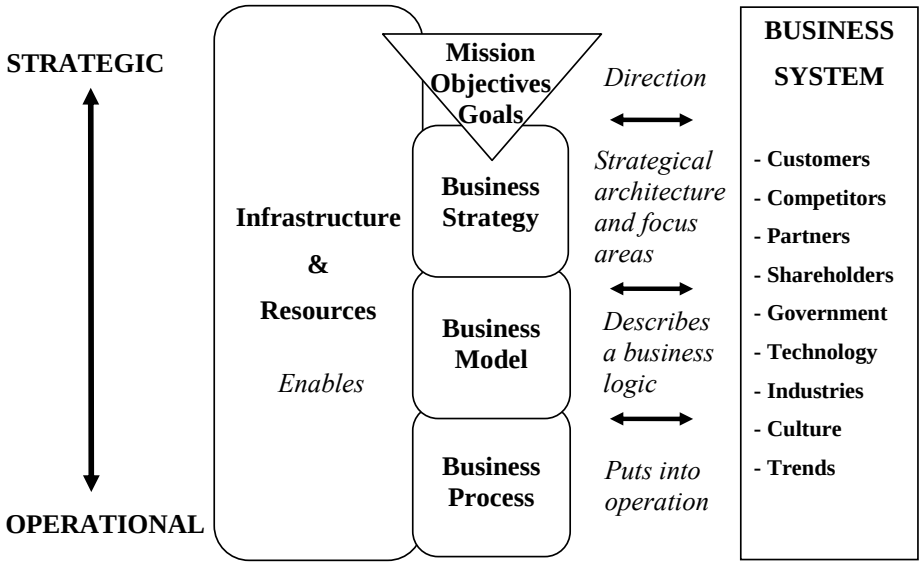


Figure 3. Business environment around the business model concept

Moreover, Hedman and Kalling (2003) discuss that a company typically has several business models, and business models are often handled on the business unit level. Hence, a company can have one chosen competitive strategy that is supported by a few business models.

2.2.3 Definition of a business model and an electronic business model

The business model concept can be regarded as a complex term due to the lack of a dominant definition of the business model (Amit and Zott, 2001). The reason for this is obvious: the business model research is not yet rigorous enough. The same holds true with the research surrounding any other concept in the early stages after its invention. Similarly, a blurred discussion was identified with the strategy concept in the early 1980s.

In a business model discussion, one may get confused between the usage of the terms “business model” and “electronic business model”. At this point, we want to define and elucidate the differences and similarities between these terms. We can note that the following terms are used in IS literature, such as Internet business model (Afuah and Tucci, 2001), business models on the web (Rappa, 2003), business models in electronic commerce (Mahadevan, 2000), and business models for eBusiness (Petrovic et al., 2001). Undoubtedly, they all have consistent meaning with the term “electronic business model” (Weill and Vitale, 2001; Osterwalder and Pigneur, 2002).

However, we want to define the terms “business model” and “electronic business model”. First, Timmers (1998, 4) defines a business model as "*an architecture for the product, service and information flows, including a description of the various business actors and their roles; and a description of the potential benefits for the various business actors; and a description of the sources of revenues*". Thus, electronic business models follow the same logic as defined in the case of business models but most of the flows, actors and sources of revenues are based on e-business (e.g. the Internet). Second, Weill and Vitale (2001, 34) continue with a similar definition of the electronic business model as: "*E-business model is a description of the roles and relationships among a firm's consumers, customers, allies, and suppliers that identifies the major flows of product, information, and money, and the major benefits to participants*." In this study, we adopt the definition of electronic business model of Weill and Vitale (2001).

Most of the authors typically adopt a specific approach or a point-of-view in discussing the business models. Boulton and Libert (2000) see business models from tangible and intangible assets perspective. They state that the business models can be measured and evaluated by following the company's tangible and intangible assets. Trombly's (2000) business model examples focus on the transaction parties and delivery channels, including business-to-business (B2B), business-to-consumers (B2C), peer-to-peer (P2P), business-to-government (B26), and e-marketplaces. Betz (2002) defines the business model having a process-oriented view in which business models are the abstracts of how inputs are transformed into value-adding outputs. In studying and comparing the business models, Palmer and Lindemann (2003) examine business models utilizing three market structures: direct search, broker, and dealer.

2.2.4 Taxonomy of electronic business models

The growth and diversity of electronic business has increased business model choices. Many of the IS researchers (e.g. Timmers, 1998; Mahadevan, 2000; Linder and Cantrell, 2000; Rappa, 2000, 2004; Weill and Vitale, 2001) have described and developed taxonomies for business models. Typically they have classified business models under a certain type of criteria, for example, revenue and position in the value chain (Rappa, 2000) and core activities and price-value balance (Linder and Cantrell, 2000).

In this study, we chose the taxonomy defined by Timmers (1998), since it was one of the first published in IS literature. Timmers categorizes eleven electronic business models along the two axes being functional integration and degree of innovation. Timmers' taxonomy is presented in Figure 4.

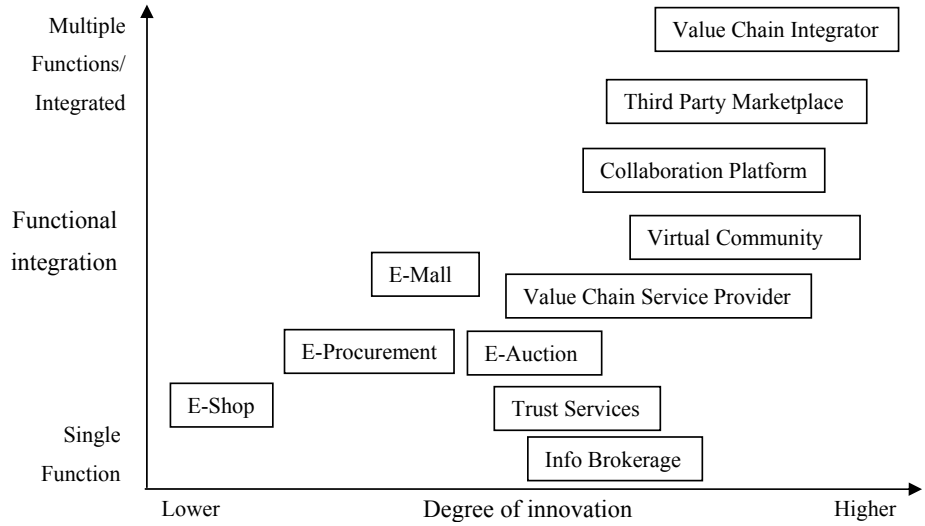


Figure 4. Classification of electronic business models (adopted from Timmers, 1998, 7)

Timmers (1998) also includes examples of all of these business model types. For instance, one E-Shop called Travelocity (www.travelocity.com) is a business-to-consumer web site selling air tickets and all other travel services.

2.3 Success concept

In the following section, a success concept is presented by defining success and reviewing the path of success studies. In addition, the critical success factor concept is explored.

2.3.1 Definition of success

According to Oxford dictionary, the term “success” is stated as follows:

"*Success is a favorable outcome, accomplishment of what was aimed at, attainment of wealth or fame of position, thing or person that turns out well."*

Webster's comprehensive dictionary states the term “success” as follows:
"Success is a favorable or prosperous course or termination of anything attempted; prosperous or advantageous issue. Success is a favorable outcome or result."

In business studies, the term “success” is used in multiple ways and studied from different angles. In the business context, the success or performance of a company is determined mainly by financial measures. But the scope of financial measures does not adequately describe success in business research, and, therefore, the need for non-financial success measures has emerged. Venkatraman and Ramanujam (1986) discuss the distinction between financial and non-financial measures. Venkatraman and Ramanujam (1986) regard financial measures as the narrowest conception of business performance fulfilling the economic goals of the company. They continue by stating that operational performance (i.e. non-financial measures) is a broader view of business performance in addition to the measures of financial performance. According to Venkatraman and Ramanujam (1986), it appears that most of the strategy studies have focused entirely on these two measures being the financial and operational measures.

To conclude, in this study, the definition of the success concept can be stated as follows: success is something in which the outcome is favorable. Different definitions of success concept also emphasize that success is always contextual; there is no absolute success. However, in order to evaluate the success of electronic business models, reference points, in which the measured objects are anchored, should be defined. In other words, the success of an electronic business model is gained when the measured issues fulfill the defined goals of electronic business. Moreover, the goals should be set for a specific time period, for example, a month, quarter, year, or even a longer time period. Success over time is discussed by means of the life cycle model.

2.3.2 Evolution of success studies

For a long time, the fundamental importance of the evaluation of information systems has been recognized in MIS literature (see e.g. King and Rodriguez, 1978). As early as the 1970s (see Figure 5), various evaluation studies already served a specific perspective, such as the information economics (Marshack, 1971), utility value

approach (Swanson, 1974), and critical information needs of management (Rockart, 1978). Thus, the first notion of the evaluation studies focused on assessing a specific informational output rather than evaluating the information system as a whole in the companies.

In the 1980s (see Figure 5), the evaluation studies focused on measuring, for example, the financial and operational performance of a firm (e.g. Venkatraman and Ramanujam, 1986), the profitability of IS investments (see e.g. McFarlan, 1981; Cron and Sobol, 1983; Bender, 1986), estimating the competitive advantage created by information systems (e.g. McFarlan, 1984), and the user satisfaction studies including the instrument of user information satisfaction, UIS (see e.g. Bailey and Pearson, 1983; Baroudi and Orlikowski, 1988).

In the 1990s and 2000s (see Figure 5), the evaluation studies were continued in IS research with similar topics as discussed in the 1980s. Also, a few emphasized topics can be identified. One of the streams of the evaluation studies is to integrate different evaluative perspectives or categories into the same evaluation framework (e.g. DeLone and McLean, 1992; Kaplan and Norton, 1992). DeLone and McLean (1992) conducted a comprehensive research by analyzing the research around IS success. They analyzed about 100 IS articles and as a result summarized the success measures into six categories: System quality, Information quality, Use, User satisfaction, Individual impact, and Organizational impact. After ten years, DeLone and McLean (2003) updated the original model, taking into account the development of electronic commerce and enhancement proposals made by several authors in IS literature. In the updated IS success model, Service quality was added as a new independent variable next to Information and System quality variables. In addition, DeLone and McLean (2003) state that Net benefits as a dependent variable consists of the most important success measures, being cost savings, expanded markets, incremental additional sales, reduced searching costs, and time savings. The balanced scorecard (BSC) is also an example of a tool in which several perspectives are synchronized. The BSC was coined by Kaplan and Norton (1992) in accounting. Following this, the concept has been widely accepted both in academic research, as well as in practice. The BSC view is also

utilized in the evaluation of electronic business models (see e.g. Osterwalder and Pigneur, 2002).

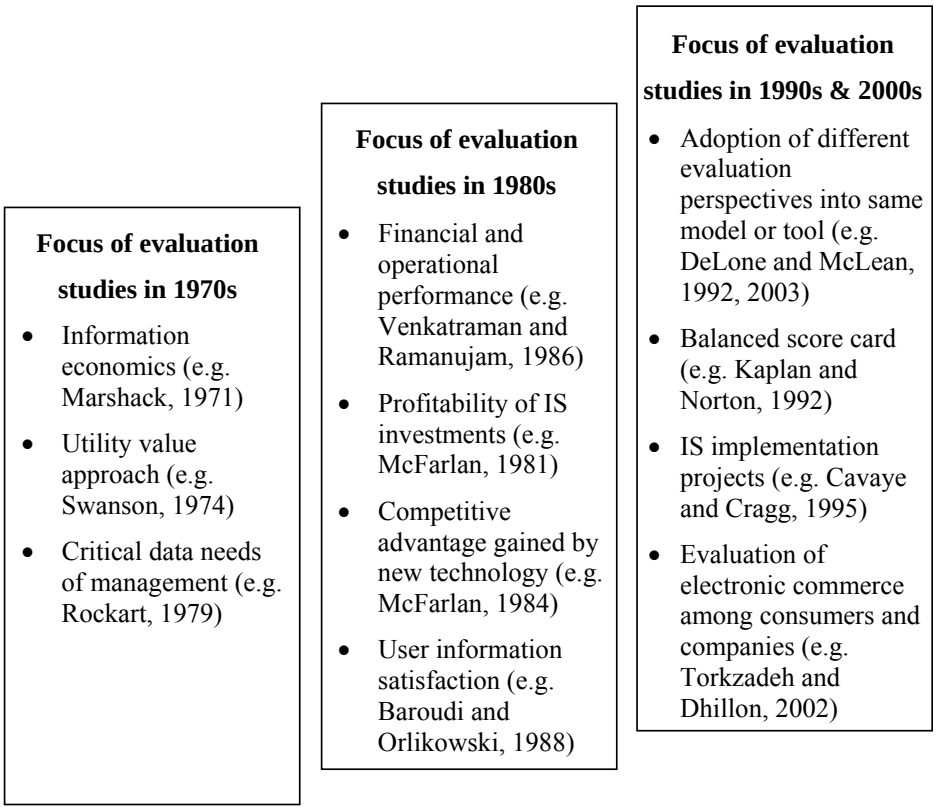


Figure 5. Evolution of evaluation studies from 1970s to 2000s

In the 1990s and 2000s (see Figure 5), the evaluation studies including complex IS implementation projects (see e.g. Cavaye and Cragg, 1995; Larsen and Myers, 1999; Akkermans and van Helden, 2002) were common. Especially, during the last decade, the evaluation of electronic commerce has also been an area of interest of several IS researchers (see e.g. Keeney, 1999; Torkzadeh and Dhillon, 2002; Chang, Torkzadeh and Dhillon, 2004).

2.3.3 Critical success factors

Initially, the concept of CSFs was developed by Daniel (1961) and refined by Rockart (1979). CSFs are the focus areas contributing most to the success of a company and to its competitive position. Therefore, it is crucial for companies to pay close attention to managing these factors.

CSFs are regarded as an accepted and widely-used concept (see e.g. Akkermans and van Helden, 2002; Peak, Guynes and Kroon, 2005; King and Burgess, 2006). CSFs can be regarded as a top-down analysis, focusing on a core set of essential issues (Boynton and Zmud, 1984). However, CSFs have also been criticized by academics and practitioners. Especially among academics, the validity of the CSFs concept has been questioned, and among practitioners the complexity of the CSFs concept may finally lead into an overly simplified business environment (Boynton and Zmud, 1984). Despite its shortcomings, CSFs can be seen as a common and recommended basis for the evaluation of electronic business model success within IS research; defined factors and measures are always required in order to evaluate success.

CSFs have also been a foundation for other concepts studying factors. First, Peffers, Gengler, and Tuunanen (2003) further developed the CSF concept by coining the term “critical success chain” (CSC). CSC follows the basics of a three-element model of personal constructs theory (Kelly, 1955) including IS attributes, CSF performance, and company's objectives. According to CSC, if the firm aims to enhance a system with certain attributes, the use of the system will result in outcomes that are observable as changed CSF performance, which is, in turn, required to achieve relevant company objectives (Peffers, Gengler and Tuunanen, 2003).

2.4 Life cycle model

In analyzing success as a process and an outcome of evolution, the concept of time should be considered. Time is a complex concept, since it has different meanings significantly affecting the evaluation of success. Obviously, companies and business models live and mature. Time can typically imply changes in the borders of the success

domain, in the goals, in the measures and reference points, as well as in the measurement of the outcome. Evaluating success within a company or business model can be like shooting a moving target (Larsen and Myers, 1999). We can only record the past, but the estimations of the future are merely predicted by uncertain measures and calculations. In addition, the variation of performance over time can produce conflicting results depending on the chosen point of time or the period of an analysis.

Life cycle model follows phase-by-phase the normal cycle of life: birth, adolescence, middle age, maturity, and death. In general, it can be concluded that this view may also be appropriate for an analysis in the business context. As early as the 1950s, both business practitioners and researchers of marketing science adopted the concept to manage and study the life cycle of products. Patton (1959), Levitt (1965), Cox (1967), and Hofer (1975) define the product life cycle (PLC) concept by describing the evolution of a product, as measured by its sales over time. Patton (1959) goes further and describes that the main idea is to create a basis for planning the strategy of a profitable product exploitation. According to Levitt (1965) and Cox (1967), different strategies are adopted at the various stages of a product life cycle. After this, different strategic actions of each life cycle stage were included (see e.g. Hofer 1975). Thietart and Vivas (1984) continued by stating that strategies do not only depend on the stage of a life cycle but are also influenced by the goal orientation of the company. In addition, success strategies appear to be contingent upon the business and the environmental characteristics.

Life cycle model has been widely applied to other disciplines too. Within the IS science, the life cycle model has been used, for example, in the context of computer-based information systems (Necco, Gordon and Tsai, 1987), systems development (Mantei and Teorey, 1989), as well as business process re-engineering (Larsen and Myers, 1999). It is also concluded that IS implementation is not a discrete event or activity that can be evaluated or studied with simple research approaches at one point in time because attitudes and beliefs may change over the various stages of the implementation process (Ginzberg, 1981).

3. Methodology of the study

The following section reviews the methodology of the study. First, the research approach is presented. Second, the reliability and validity of the study are discussed. Third, the research process is described. Finally, the methodology and research strategy of each paper is reviewed.

3.1 Research approach

One of Kuhn's (1962) main contributions in the field of the philosophy of science is that science is practiced within different conceptual frameworks, labeled as paradigms. Gummesson (2000) states that in science, a paradigm consists of a researcher's perception of what one should be doing and how one should be doing it, and what are the interesting research problems and which methodological approach can be used to tackle them. Gummesson (2000) continues that the scientific paradigm significantly affects the researcher's goals, pre-understanding and understanding, choice of research territory and, within research projects, methods and researcher roles.

Two main research philosophies are positivism and interpretivism (Figure 6). Positivism has a long and rich historical tradition, and it has a strong association with the physical and natural sciences. Positivists are mainly object centered, whereas interpretivists are human centered. Thus, in positivism the phenomena are isolated and results should be repeatable. In addition, positivism is characterized by reductionism and refutability (Checkland, 1981). Traditionally, the positivist approaches have dominated the field of IS research. For example, Alavi and Carlson (1992) reviewed 902 information systems (IS) research articles and found that, surprisingly, all the empirical studies were based on positivistic approaches. Fortunately, during the last decade, the interpretivist paradigm has also become more common (Walsham, 1995b) after many authors have criticized the dominance of positivism in IS (Klein and Lyytinen, 1984; Orlikowski and Baroudi, 1991; Klein and Myers, 1999). According to Anderson (1983), studies of both the natural and social science disciplines reveal few periods in which a single paradigm

has dominated. Similar phenomena can be recognized in IS: a shift from positivism to interpretivism. There is also a lot of discussion on the issue of whether or not the positivist paradigm is suitable for the social sciences. One proposed solution for this is a pluralistic attitude towards IS methodologies (e.g. Banville and Landry, 1989).

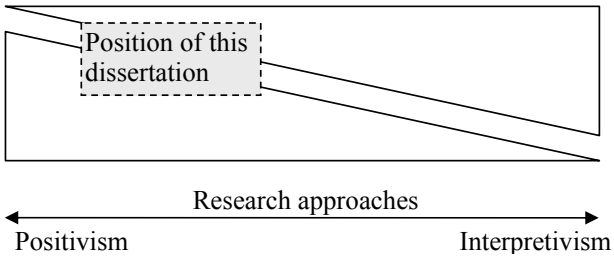


Figure 6. Main research approaches in IS (adopted from Galliers, 1992)

Galliers (1992) introduces a range of approaches to IS research which can be divided into two categories: scientific and interpretivist. The division analogically follows the two philosophies presented above. Scientific approaches are laboratory experiments, field experiments, surveys, case studies, theorem proofs, forecasting, and simulation. Approaches defined as interpretivist are subjective/argumentative, reviews, action research, descriptive/interpretive, futures research, and role/game playing.

In this study, case study and survey approaches were chosen representing the positivist paradigm following the taxonomy presented by Galliers (1992). First, according to Yin (1994), the strength of the case study approach is that it enables the capturing of reality by natural settings and in enough detail. Also, the approaches make it possible to acquire rich data, including various complementing research materials, such as notes, documents, artifacts, interviews, and other observations. Weaknesses of the case study approach are the limitation of the organization units, uncertain generalizations, difficulties to replicate the research with identical settings, cost and time requirements, as well as difficulties to distinguish the cause and effect of certain variables (Yin, 1994). Second, a survey, as a method to conduct research, is typically referred to as a quantitative approach. The surveys are snapshots of a specific situation in which questionnaires or (structured) interviews are used. Large samples also enable the

generalization of the results. Moreover, requirements for time frame and costs are not typically major barriers for the implementation of the research. The challenges of the survey approach are the context insensitivity and the difficulties in the variable manipulation. Variable manipulation may be needed, for example, in laboratory experiments. One of the weaknesses of the survey approach is also the likelihood of bias among the respondents. For example, every respondent has a different opinion on the questions asked, causing misunderstandings. Thus, the setting of the questions in the questionnaire is a very crucial stage of the research process. In addition, the surveys disenable the recognition of insights and causalities that might affect the responses.

As mentioned by Banville and Landry (1989), Klein, Hirchheim, and Nissen (1991), and Galliers (1992), IS research needs methodological pluralism. However, the research methodology in this dissertation can be regarded as pluralistic since the research combines both quantitative and qualitative methodologies. For example, Paper I adopts qualitative research methods, where empirical data from five case companies is gathered through interviews. After this, Paper II continues the study reported in Paper I with a quantitative research method. This survey was conducted to enlarge the initial sample.

3.2 Reliability and validity

Next, we shortly review how reliability and validity are addressed in this study, assuring the quality of the research since any research analysis is irrelevant if the data is collected with measures that have not been proven to provide reliable and valid data and results (Nunnally, 1978). Churchill (1979) emphasizes the need to purify the measurement instrument in order to develop better measures of variables for researchers to work with. Straub (1989) also raises the lack of instrument validation, which is still an inadequately addressed method and a part of the research process within IS research.

Reliability is the degree of internal consistency of the measure answering the questions of how well a measuring instrument measures the intended constructs and whether the measure provides the same results every time it is used. Typically, the internal consistency was performed using Cronbach's alpha (Nunnally, 1979) especially in the

papers including quantitative data (Papers II, IV, and V). In the papers utilizing qualitative data (Papers I and III), the repeatability of the results of the study includes issues related to the stability of interviews and the similar documentations of them. This meant that the interviews needed to follow structured interview guidelines with the same questions, background materials, and the definitions of the key concepts (Yin, 1994).

A valid measure evaluates what it is supposed to evaluate. Firstly, construct validity is concerned with the relationship of the measure to the underlying attributes which it is expected to assess. In the study, to confirm the construct validity, we chose the most common techniques which are correlations and principal component analysis in the quantitative analysis. In the case of interviews, we used multiple sources of evidence such as interview notes, articles, documents, and other support material. Second, internal validity is a concern only for research studying causalities i.e. the causality between the independent and dependent variables. In Paper V, a conceptual framework of the study represents an ideal research setting in which the internal validity is tested. In addition, replication logic was used to ensure that the findings were consistent across all of the cases, including interviews. Finally, external validity refers to the question of whether the findings of the study can be generalized beyond a particular research context (Yin, 1994). In the study, external validity can be relied on statistical generalization with the studies utilizing survey data (Papers II, IV, and V) and on analytical generalizations with the research utilizing case studies (Papers I and III). Moreover, external validity was addressed through replication both in the cases of qualitative and quantitative data gathering.

3.3 Research process

The research process (see Figure 7) was initiated with the interviews in 2003. In the early stage, these two interview periods enabled the right direction for the studies for investigating electronic business models and their evaluation. The first interview section mainly served the preparations of the survey, whereas the second interview section was

an independent research project focusing on the Scandinavian Internet portals in the healthcare and mobile portal markets.

Parallel with the interviews, success factors were also collected from the refereed journal sources, completing the list of success factors that would be an essential part of the survey. At the same time, the list of respondents for the survey was confirmed with several phone calls to the 61 companies assuring that the current persons were taking part in the research. Finally, the survey was sent to the 450 respondents in 61 Finnish companies in spring 2003.

In fall 2003, an initial analysis and documentation began based on the interviews. After this, the first papers were published in summer 2004 and in winter 2005.

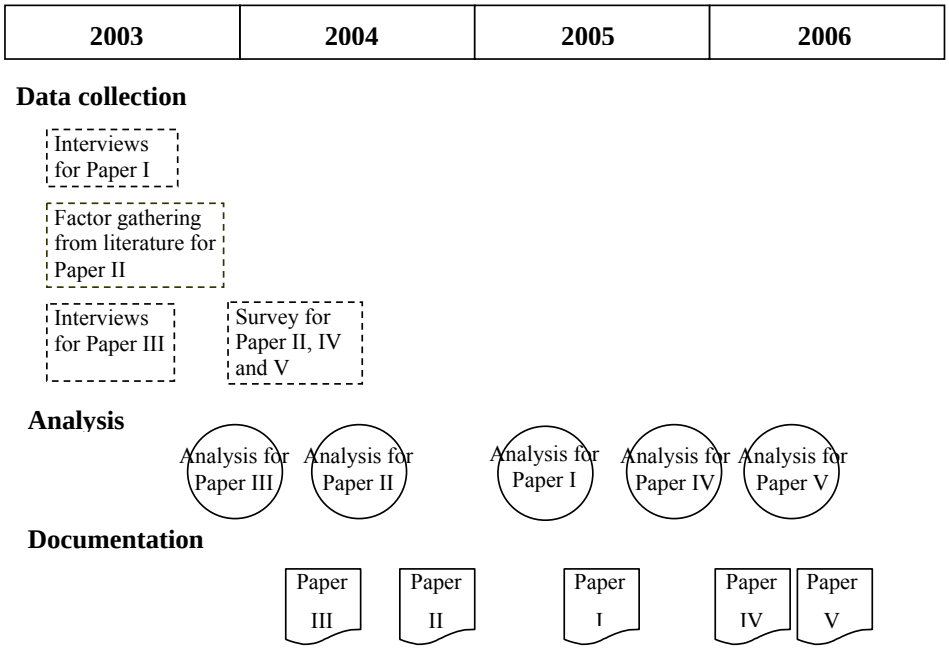


Figure 7. Research process

Finally, the analysis based on the survey data was continued by quantitative data experts, after which new avenues for the findings were enabled in the final papers. The research process is summarized in Figure 7.

3.4 Study design and data collection

Next, the methodologies of each paper are shortly reviewed, and then Table 1 concludes the methodology and data collection specifications.

3.4.1 Paper I

In Paper I, a case study strategy (Eisenhardt, 1989b; Yin, 1994) was selected as the research method. The advantage of this method is that it enables the study of e-business models (i.e. phenomenon) within their real-life context where the boundaries between the phenomenon and its context are not evident (Yin, 1994).

Interviews were used in the empirical data collection, in (Yin, 1994). The 17 interviews among the managers of five Finnish companies were in-depth and person-to-person (see Appendix 2). Each interview was documented by notes and drawings during the interview. Altogether, interviews resulted in 70 different initial CSFs (see Figure 8).

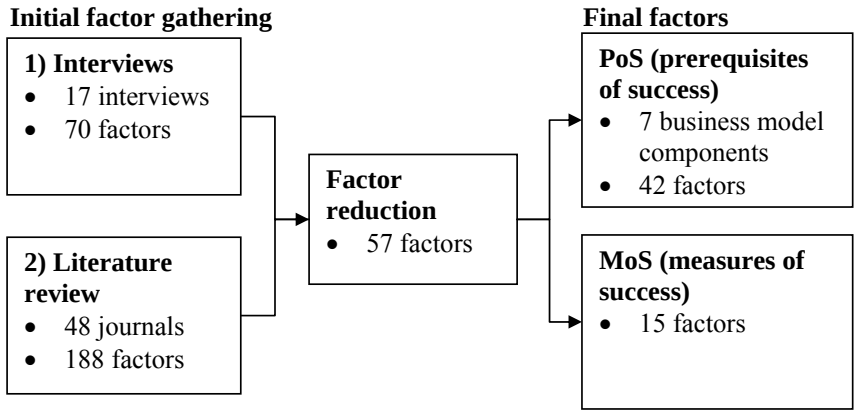


Figure 8. The study design of Paper I

Moreover, literature was reviewed and CSFs were continuously collected before and after the interviews. The literature review resulted in 188 CSFs from 48 academic journals. It was recognized that the CSF lists generated through the literature review and interviews were complementing each other but also having some factors in common. Hence, the number of CSFs needed to be reduced by removing all the overlapping CSFs. Next, most of the CSFs were linked to literature sources that report on empirically sampled and tested CSFs. Finally, 57 variables were identified as the basis for the e-business model evaluation tool including 42 PoS (prerequisites of success) and 15 MoS (measures of success).

3.4.2 Paper II

Paper II utilizes quantitative methods (i.e. surveys) whereas the research reported in Paper I was conducted using qualitative research methods (i.e. 17 interviews among the managers in Finnish companies). After the interviews, literature review, and the synchronization of these two initial data sources, 57 factors were identified that were included as variables in the survey. From these, 42 were considered to be prerequisites of success and 15 measures of success (see Figure 9).

Next, a component listing was used to categorize the success factors related to various companies' e-business models. According to an e-business model framework suggested by Hedman and Kalling (2003), the prerequisites of success factors were grouped into the categories of 1) customer; 2) competition; 3) offering; 4) action and organization; 5) resources; 6) suppliers; and 7) scope of management.

After the categorization of the list of e-business model factors, the initial survey questionnaire was designed. The list of CSFs was presented in such a way that the respondents were able to evaluate the importance of each factor within the scale from 1 (not important) to 7 (extremely important). Common questions related to the demographic data of the respondents, as well as their companies were included. The questionnaire was pilot-tested with ten experts representing both practitioners and academics.

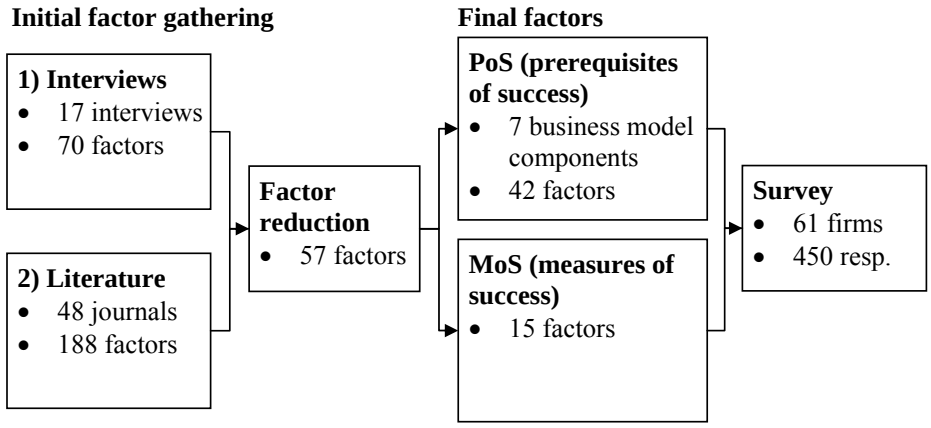


Figure 9. Factor gathering and data collection process related to Paper II

The respondents were chosen for the sample from international Finnish companies according to these two criteria: 1) the company is among the top 30 Finnish companies in terms of revenue and/or 2) the company belongs to the top 100 online brand list in Finland. This way, we ended up with a list of 61 companies from various industries. Finally, a sample of 450 people was chosen to whom the questionnaire was sent by mail (see Appendix 3). All the respondents were practitioners both from managerial and operational levels of an organization, and they were all working with electronic business issues.

3.4.3 Paper III

The participating portals were chosen from two areas because our intent was not only to study the implementation strategy, but also the evolution proximity of similar portals. We selected three portals on healthcare and three portals on mobile services; two each from Denmark, Finland and Sweden, altogether six portals. The reason for choosing the healthcare portal was the relatively long time they have been operating. The rationale behind choosing the mobile service portals, in turn, was their actuality. In addition, the mobile service portals have had the opportunity to learn from mistakes they have made in the past. Hence, mobile portals and healthcare portals interestingly represent different backgrounds, industries and characteristics of portals in the empirical case study.

A multiple interpretive case study design forms the basis for the findings of this paper (Walsham 1995a). The data gathering was conducted in February 2003 in all three countries with informal follow-up questions (see Appendix 4). This was necessary as the interviewees often clarified issues that had been covered earlier in the interview, or the interviewee's answer to a question prompted the interviewers to ask questions outside of the interview guide, or to encourage the interviewees to enhance their answers. Each case analysis of the six portals was the foundation for the final case analysis, and they were verified with the portals in terms of feedback and validation.

3.4.4 Paper IV

In this paper, the utilized data is gathered from the same survey as reported in Paper II and Paper V, but this paper utilizes data from the second part of the questionnaire (see Appendix 3), whereas Paper II and Paper V from the first part. In the survey, 104 respondents assessed the importance of 20 CSFs in the different life cycle stages of an e-business model. The life cycle stages are introduction, growth, maturity, and decline. In the questionnaire, a respondent was able to mark one or several life cycle stages indicating the existing relevance of the current success factor at a particular stage of the e-business model's life cycle.

3.4.5 Paper V

This paper utilizes the same data gathered with the quantitative methods (i.e. survey) as in Paper II. But where Paper II studied all seven e-business model components, Paper V focuses entirely on one component of an e-business model, being the offering component. However, the data collection is identical to Paper II (see Appendix 3).

Methodologically, a validation of the 9-item measurement instrument was crucial in order to secure the quality of results derived from studying a business unit's success factors related to its market offering. Any statistical analysis, for example, the hypothesis testing, is irrelevant if the data is collected by measures that have not been proven to provide reliable and valid data and results (Nunnally 1978). Hence, by the

instrument validation, both reliability and validity were assured. In this paper, the internal consistency (i.e. reliability) is performed using Cronbach's alpha. In the validity tests, content validity, predictive validity, and construct validity were considered.

3.4.6 Summary of the research strategies and data collection

However, the study combines both qualitative and quantitative research methods proving a pluralistic approach. Table 1 summarizes the research strategies, data collection, and purposes of each paper.

Table 1. Research strategies, data collection and purposes of each paper

Paper	Research strategy	Data collection	Purposes
Paper I	Case study	• 17 interviews in 5 Finnish companies • A literature review of 48 journal articles	• To describe the five e-business model cases • To build an evaluation tool for e-business models
Paper II	Survey - Part 1	• Questionnaire to 450 managers in 450 business units • 61 Finnish companies	• To get respondents' evaluation for the 42 PoS factors and 15 MoS factors
Paper III	Case study	• 6 interviews • 6 Internet portal companies • 3 Scandinavian countries	• To test Portal Management Model introduced by Damsgaard, *CAIS* 2002
Paper IV	Survey - Part 2	• Questionnaire to 450 managers in 450 business units • 61 Finnish companies	• To discover the set of CSFs for each stage of e-business model's life cycle
Paper V	Survey - Part 1	• Questionnaire to 450 managers in 450 business units • 61 Finnish companies • Respondents focus on 9 CSFs around the Offering component of business model	• To study the dependency between four principal components

4. Evaluation of electronic business models

In this section, the need for the evaluation of electronic business models is recognized based on recent literature. After this, the main contribution of the dissertation, i.e. the evaluation tool of electronic business models, is presented.

4.1 Identifying the need for the evaluation tool of electronic business models

Pateli and Giaglis (2003, 2004) have reviewed the business model literature and have constructed a research framework for the field of e-business models. In discussing the evaluation models, Pateli and Giaglis (2004) clearly raise the need for the evaluation of e-business models since the evaluation model sub-domain is among the less mature areas of the business model research. Moreover, their results from the e-business model literature review demonstrate the need for further research in assessing business models from different perspectives. So far, a few studies (e.g. Hamel, 2000; Afuah and Tucci, 2001; Weill and Vitale, 2001; Osterwalder and Pigneur, 2002; Morris, Schindehutte, and Allen, 2005) briefly discuss the evaluation of e-business models, but contributions concerning the concrete methods and tools are still scarce.

Pateli and Giaglis (2003) present a framework for categorizing e-business model studies according to their maturity (see Figure 10). The framework is a matrix with two dimensions: the timeliness and the degree of integration. The framework quite clearly describes the maturity of the business model research, which can be divided into constructive and evaluative studies. According to the framework, the low timeliness and low integration sections include constructive issues related to the business model discussion and research such as the business model definition (Timmers, 1998; Rappa, 2000, 2004; Amit and Zott, 2001; Weill and Vitale, 2001), component listings (Afuah and Tucci, 2001; Amit and Zott, 2001; Linder and Cantrell, 2001; Osterwalder and Pigneur, 2002; Hedman and Kalling, 2003), taxonomies (Timmers, 1998; Mahadevan, 2000; Rappa, 2000, 2004; Applegate, 2001), and case representations (Afuah and Tucci, 2001).

After the constructive e-business model section in the model of Pateli and Giaglis (2003), a more matured e-business model research begins with a high degree of timeliness and integration. The top-right quarter in their matrix focuses on the evaluative issues of e-business models, including the evaluation models (Afuah and Tucci, 2001; Weill and Vitale, 2001, 2002; Osterwalder and Pigneur, 2002), as well as change methodologies (Linder and Cantrell, 2001).

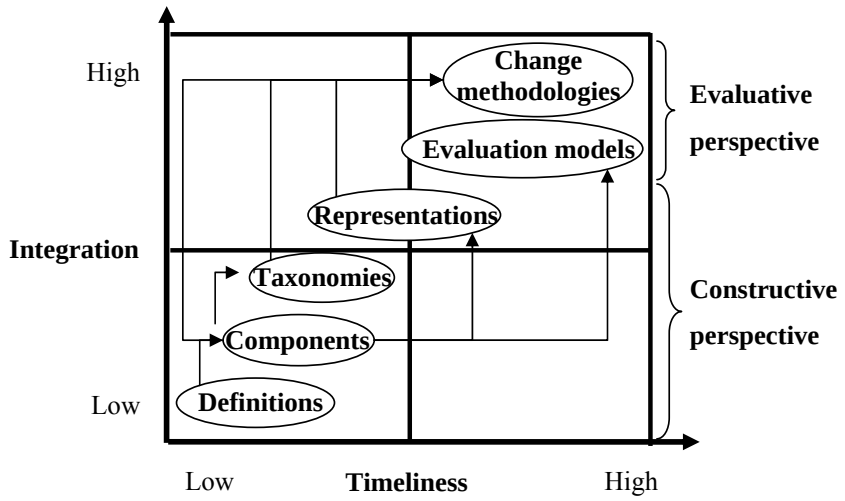


Figure 10. The maturity of e-business model studies (adopted from Pateli and Giaglis, 2003)

There are a remarkable number of business model studies focusing on the constructive and static view-points instead of describing the dynamic nature and evolution of a business model. Hence, in this study, the evaluative point of view in the context of e-business models is adopted. Based on the e-business model evaluation, we are able to:

- Set and follow up of the goals and objectives of an e-business model.
- Develop an e-business model based on the feedback received from the evaluation.

- Compare an e-business model to a competitor's model.

- Prove and verify the gained success of an e-business model.

4.2 Evaluation tool for electronic business models

Both practitioners and academics discussing e-business models need an approach to evaluate them (Pateli and Giaglis, 2003, 2004; Osterwalder, Pigneur, and Tucci, 2005). Since the usage of e-business models is becoming common in companies throughout the different industries, the evaluation of e-business models can be justified (Pateli and Giaglis, 2004). The evaluation enables one to set goals and objectives for the e-business models, to focus on and prioritize the most essential business actions and decisions in the management and operative functions, to develop the e-business model, as well as to compare the e-business model to that of its competitors. This is made possible with the evaluation tool presented in Table 2.

The evaluation tool is based on the CSFs following the life cycle: the prerequisites of success are needed in order to gain results and objectives. Similarly, the factors in the evaluation tool are two-fold: the prerequisites of success (PoS) and measures of success (MoS) factors. All the CSFs are gathered from both the literature and interviews according to the research methods presented in the Methodology section. The literature links of each CSF are available in Appendix 1. In grouping the PoS factors, we use a categorization of the e-business model components. Hedman and Kalling (2003) define the following seven business model components: (1) customers; (2) competition; (3) offering; (4) activities and organization; (5) resources; (6) suppliers; (7) and scope of management.

The evaluation tool for e-business models can be used both by practitioners and researchers in measuring the level of success and giving a summarized list of issues that should be taken into account for a particular e-business model. For practitioners, the tool can be used in creating new e-business model ventures: the tool enables the making of a prioritized checklist of the most crucial issues to be considered. Moreover, the tool

is also a way to compare a new e-business model to the existing e-business models in the market. E-business model evaluation has been performed by financial companies or other similar parties that have an interest in studying e-business models in performing their pre-studies and making decisions concerning the financial arrangements and acquisitions. The e-business model evaluation tool can also be utilized in making new agreements, for example, with the content providers and other partners. In this case, the evaluation would support revenue and cost allocations according to the separate roles within the cooperation. For the academics, the tool contributes to e-business model research from the evaluative point-of-view by listing critical success factors under each of the seven business model components.

Table 2. Evaluation tool for e-business models and an illustration

——— **Our business model's Current situation**

- - - - - - **Our business model's One-year target**

Competitor A's business model

		STATE OF THE FACTOR						
A) PREREQUISITES OF SUCCESS FACTORS		**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
1) CUSTOMER COMPONENT								
A1	E-business model related customers are recognized							
A2	E-business model related customers have an ability for increased independence e.g. through self-service							
A3	E-business model has an ability to reach a targeted customer segment							
A4	E-business model related customer needs are identified and understood							
A5	E-business model achieves trust among its customers							
A6	Customer service of e-business model is always available (24/7/365)							
A7	Time-saving is enabled for the e-business model related customers							
A8	E-business skills are improved together with the e-business model related customer							
A9	The e-business model related customer data is gathered and utilized							
A10	E-business model related customer service is well-functioning and responds quickly to its customers requests							
A11	E-business model related customers are encouraged to use electronic channels (e.g. Internet)							
A12	IT security is guaranteed for the e-business model related customers							

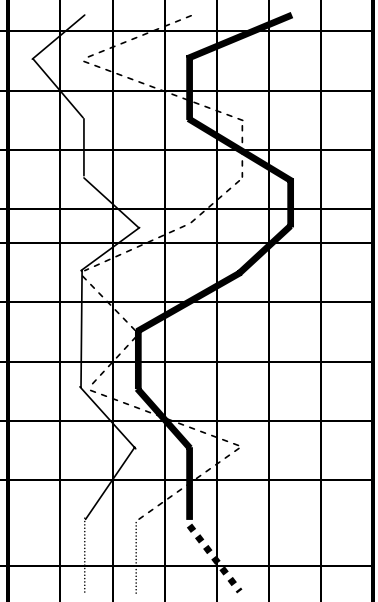


Table 2 continues...

2) COMPETITION COMPONENT		-3	-2	-1	0	+1	+2	+3
A13	Decisions regarding the competitive strategy of e-business model are evident being either cost leadership or differentiation strategy							
3) OFFERING COMPONENT		**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
A14	E-business model related offering is easily and geographically widely accessible							
A15	The quality of products and services in e-business model is good							
A16	E-business model related offering is priced profitably							
A17	E-business model related processes and offering are easy to use							
A18	E-business model related offering portfolio is well-managed in each life-cycle stage							
A19	E-business model related offering is continuously improved based on customer feedback							
A20	E-business model related offering is targeted and personalized based on customer desires							
A21	E-business model related offering is clear							
A22	The range of e-business model related offering is large							
4) ACTIVITIES AND ORGANISATION COMPONENT		**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
A23	E-business model and its offering has a strong brand							
A24	E-business model related operations are reliable							
A25	E-business model can be regarded as an innovative forerunner in terms of products, services and technology							
A26	E-business model and its offering is constantly developed							
A27	E-business model's operations and processes are cost efficient							
A28	E-business model related operations and activities are managed in terms of the right timing							
A29	E-business model related activities and organization reacts quickly to relevant changes in its business environment							
A30	E-business model related organization's culture and atmosphere are open							
A31	E-business model related organization has readiness to implement new technologies in its e-business							
A32	E-business model related organization has an ability to solve e-business related problems efficiently							

Table 2 continues...

5) RESOURCES COMPONENT		-3	-2	-1	0	+1	+2	+3
A33	E-business model related personnel is highly experienced and possesses good capabilities and skills							
A34	E-business model related personnel is highly motivated and committed							
A35	E-business model related software and hardware are stable							
6) SUPPLIERS COMPONENT		**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
A36	E-business model related management accomplishes well networking and partnering relations							
A37	E-business model related operations achieves trust among its business partners							
7) SCOPE OF MANAGEMENT COMPONENT		**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
A38	E-business model related management handles the multi-channel environment including both the traditional and electronic channels							
A39	E-business model related management is committed to e-business development							
A40	Systematic risk management minimizing the vulnerability of e-business model is regarded relevant							
A41	E-business model related management has the ability to identify new e-business opportunities							
A42	E-business related management acknowledges both cultural and generational differences when developing its e-business							
B) MEASURES OF SUCCESS FACTORS		**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
B1	E-business model related customers are satisfied							
B2	E-business model related customers are loyal							
B3	E-business model related business has favorable number of customers							
B4	E-business model related benefits are shared with customers							
B5	E-business model related customers' search costs are reduced							
B6	E-business model related partnerships are successful							
B7	E-business model related offering has reached market leadership							
B8	E-business model related business is profitable							
B9	E-business model related business has adequate turnover							
B10	E-business model related business is growing in terms of profits							
B11	E-business model related business is growing in terms of turnover							

Table 2 continues...

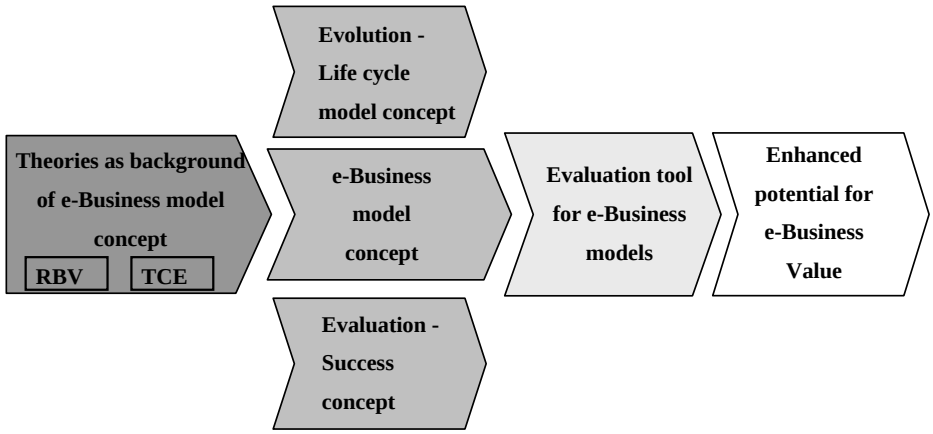
B12	E-business model related business achieves strategic goals							
B13	E-business model related business has a good market value							
B14	E-business model related business explicates savings and benefits							
B15	E-business model related business has good return on investment							

To conclude, the evaluation tool provides a way to represent and use CSFs in evaluating e-business models. At first, CSFs related to the e-business model being studied should be defined and recognized (see example in Table 2). In addition, each CSF should be prioritized (using e.g. Likert scale) in order to discover the most essential focus areas. After having the initial list of CSFs, the evaluation of the e-business model can be accomplished. Also, an evaluation of a competitor's e-business model with the same set of CSFs is possible in order to recognize an e-business model's strengths and weaknesses against the competitor's e-business model. In using the tool on a regular basis (e.g. once a year), the development of an e-business model can be monitored against the set objectives.

5. Review of the papers

In this section, all five papers are positioned into the research structure and each paper is briefly discussed. The descriptions and research questions are also introduced to outline the constructs of the presented papers. Finally, the key findings of each paper are reported.

The research structure illustrates the role of a specific paper in the dissertation (see Figure 11). The research structure is built based on the existing theories and concepts. In Paper I, the evaluation tool for an e-business model is created, in which RBV and TCE are the main underlying theories. In Paper II, the evaluation tool is utilized with empirical data. Paper III focuses on investigating e-business models and life cycle models in the Scandinavian portal business environment. In Paper IV, the maturity of CSFs is studied at each stage of the e-business model's life cycle. Paper V explores the offering component of an e-business model by studying the dependency between the offering component's CSFs and the e-business profitability.



Component of the research structure	Paper I	Paper II	Paper III	Paper IV	Paper V
Resource based view	X				
Transaction cost economics	X				
e-Business model concept	X	X	X	X	X
Life cycle model			X	X	
Success concept		X		X	X
Evaluation tool for e-Business models	X	X		X	X
Enhanced potential for e-Business value					X

Figure 11. Positioning of the papers into the research structure

5.1 Paper I: Evaluation Tool for e-Business Models

The purpose of the first paper (Horsti, 2006a) is to describe the e-business models of five case companies and build an evaluation tool for e-business models. The earlier studies on business models concentrate on the definition of the business model concept and identifying its components. This paper studies how a business model works and how it can be evaluated (see Appendix 2). Based on the evaluation of business models, a company can set and follow-up defined objectives and goals for a business model,

compare the competitiveness of a business model to the other business models in the market, continuously develop a business model, as well as prove the success of a business model. The evaluation tool is based on critical success factors gathered from two sources: a literature review on essential management research and an empirical study on five e-business models from different industries.

The paper seeks to answer the following research questions:

i) What kind of approaches and methods can be adopted in evaluating an e-business model?

ii) Which are the most essential PoS (prerequisites of success) factors enabling the success of an e-business model?

iii) Which are the most essential MoS (measures of success) factors proving the success of an e-business model?

5.1.1 Results of Paper I

From Paper I, three main results can be derived. First, the paper suggests a technique for describing a business model. Before evaluating a business model, the business model should be properly described. By following this process, the most essential parties, roles, and transactions between them can be identified and recognized. Drawing the big picture of the studied business model may be helpful both for practitioners and academics.

Second, the paper introduces an evaluation tool for an e-business model. The evaluation tool was built based on the CSFs following the idea of a life cycle model: the prerequisites of success are needed in order to gain results and objectives in the end. However, the evaluation tool consists of two factors which are PoS (prerequisites of success) and MoS (measures of success). The evaluation tool for e-business models can be used both by practitioners and researchers in measuring the level of success and giving a summarized list of issues that should be taken into account when considering a

particular e-business model. For the practitioners, the tool may be useful in creating new e-business model ventures, by providing a checklist that can be easily prioritized for a new e-business model. Moreover, the tool is also a recommended way to compare new e-business models to the existing e-business models in the market. E-business model evaluation has actively been performed by financial companies and other similar parties that have an interest in studying e-business models in conducting their pre-studies and making decisions concerning the financial arrangements and acquisitions. The e-business model evaluation tool can also be utilized in making new agreements, for example, with the content providers and other partners. In this case, the evaluation supports revenue and cost allocations according to the separate roles within the cooperation. For the academics, the tool may be useful in contributing to e-business model research from the evaluative point of view. Furthermore, the evaluation tool is built based on the previous literature on the success concept and life cycle model studies. The paper offers a large-scale literature basis for a factor-based evaluation and an academic discussion.

Third, the evaluation tool was used in the context of five cases from five industries including travel, media, logistics, telecom, and paper. The paper includes the case descriptions and analysis of each case in which the most essential PoS and MoS factors were recognized. The cases prove the usability of the evaluation tool by identifying the most crucial factors on which the management of a business model should focus its attention.

5.2 Paper II: Evaluation of Electronic Business Model Success

Paper II (Horsti, Tuunainen, and Tolonen, 2005) continues the research reported in Paper I. Where Paper I focused on building an evaluation tool for e-business models, Paper II tested the importance of each of the prerequisites of success (PoS) and measures of success (MoS) factors by conducting a survey among Finnish companies (see Appendix 3). The aim of the paper is to identify the most essential CSFs affecting the success of e-business models, including both business-to-business (B2B) and business-to-consumer (B2C) e-businesses. Accordingly, the stated research goals are:

i) To examine and analyze the relevant CSFs that are the prerequisites of the success of an e-business model.

ii) To examine and analyze the most important measures of success derived from the prerequisites of success.

5.2.1 Results of Paper II

First, the results derived from the PoS factors indicate that the most important factor is the secured transactions between the company and its customer. When comparing the traditional and e-business model, this result is evident since the security related matters are clearly emphasized in the e-business model context. The management's commitment to the development of e-business had the second highest mean value among the respondents. However, it is noteworthy that traditional leadership matters are still regarded as important. The third most important factor was ease-of-use of the e-business products and services.

In analyzing the PoS factors, the variance analysis was used to identify the differences between the means in terms of the e-business model's competitive strategy, client base, and revenue. In terms of competitive strategy, the results indicate that respondents, representing both cost leadership and differentiation strategies, rate the importance of wide product offering rather high. Interestingly, the respondents representing cost leadership strategy in their e-business model value it higher than the other group. In terms of the client base, some differences between the respondents representing B2B and B2C oriented e-business models were discovered. Respondents representing B2C-oriented e-business models appear to see the wide e-business product offering as more important than in B2B models. Moreover, the competitiveness is not seen as relevant among the B2B oriented e-business models compared to the B2C-oriented models. In terms of the grouping based on revenue, statistically significant differences were not found.

Second, the aim of the study was to examine and analyze the most important measures of success variables. Among the respondents, customer satisfaction was the most essential factor, which is in line with several earlier studies. The second most important result of success factor was the cost savings factor, testifying to the existing phenomenon in business to focus mainly on profitability instead of the significant growth rates of revenue as in the early 2000s.

The measures of success variables were grouped under four main factors in the factor analysis. The four factors generated were titled as follows: Financial Stability, Effectiveness and Economical Values, Market Growth, and Customer and Partner Relationships. The aim of the factors was to categorize similar respondents according to these underlying factors. The two clusters generated can be described as those seeking stability and those striving for growth. Finally, when conducting a variance analysis we found slight differences between the two clusters in the variables of "shared benefits with customers", "number of customers", and "market leadership".

5.3 Paper III: Sustainable Evolution of Business Models

Portals exist for a large number of topics and they have become quite common on the Internet. So far, researchers have not extensively studied the evolution of portals and only a few portal business models have been reported in the literature. In Paper III (Damsgaard, Horsti and Nilsson, 2004), the researchers wonder if Internet portals are following the same evolution path and what kinds of similarities and differences can be observed (see Appendix 4). The research is focused on six portals from three Scandinavian countries being Denmark, Sweden, and Finland. Three of the portals are from the healthcare business and three from the mobile service sector.

In the paper, the following research questions are stated:

i) How to understand the business models and current issues of the Internet portals?

ii) What differences and similarities exist between the evolution trajectories of similar portals?

In the paper, the portal business models are researched by using the concept of the life cycle model. The PMM (portal management model) represents a classic life cycle model, which is especially tailored to Internet portals. The model is depicted in Figure 12.

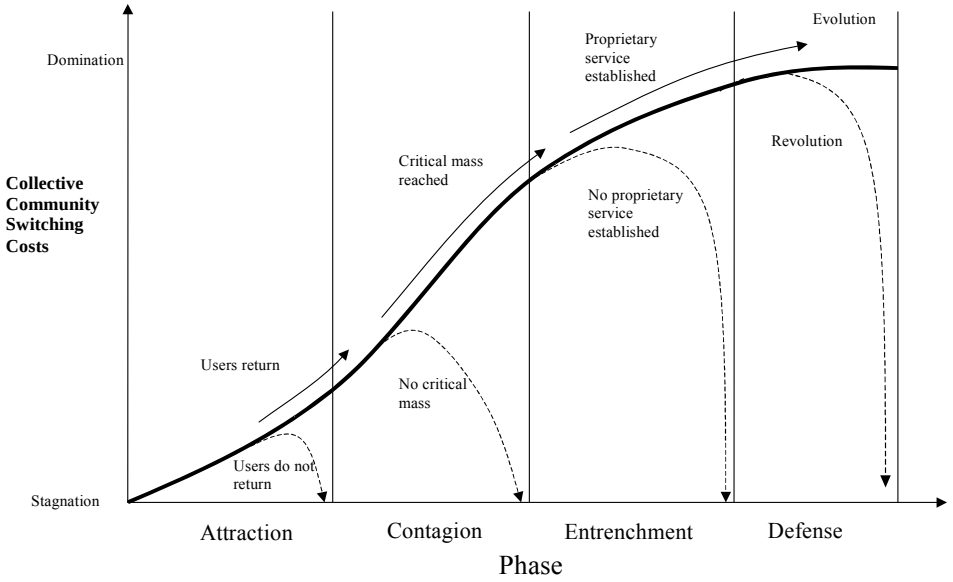


Figure 12. Portal management model (Damsgaard, 2002)

The PMM idealizes a successful portal implementation process from genesis to domination. The model consists of four stages, of which each focuses on different aspects of the portal-building efforts.

5.3.1 Results of Paper III

The PMM depicts all six portals and characterizes their business. All the portals have initially concentrated on attracting customers on an individual basis. Later, when the portal has matured, the focus has been extended to include community-building efforts.

Only a few of the portals are now ready to consider how to establish a proprietary service to link the users and the communities firmly to the portal.

Geographically, the local language seems to be a deciding factor in choosing a portal to visit. For example, in the healthcare portal, an average visitor does not know the medical terms in foreign languages. Thus, people tend to choose the local language portal. This was confirmed as none of the three healthcare portals reported any serious international competition. The choice of the local mobile service portal can also be explained by the locality of the mobile operators' infrastructure; it cannot be reached from the outside. We believe that the local language is crucial in attracting visitors and customers into a portal. This is a general observation that can be applied across the entire spectrum of portals.

In terms of age, all six portals seem to attract quite a narrow customer segment. The health portals seem to mainly attract women between the ages of 25 and 45, whereas the mobile service portals mainly attract people under 35 years of age.

In general, communities are becoming increasingly important for the portals as a means of attracting the users closer to the portal and increasing the user loyalty. Management of the communities is still in its infancy, both conceptually and operationally. This does not mean that the roles of a community are not evolving (e.g. community leaders). In fact, it means that the portals are not yet in control of their communities, and this is what the portals should focus on next.

5.4 Paper IV: Combining Critical Success Factors and Life Cycle Model to Enable Evaluation of e-Business Models

In evaluating the e-business models, prevailing life cycle stage should be considered since the success may vary, depending on the time when the evaluation is accomplished, as well as depending on who has made the evaluation (Larsen and Myers, 1999). Due to this variance of success, the aim of the research reported in Paper IV (Horsti, 2006b) was to seek differences between the four life cycle stages of an e-business model, as

well as in their CSFs allocations. Twenty CSFs and their behavior in each life cycle stage of an e-business model were analyzed.

Hence, the paper seeks to answer the following research questions:

i) Do the set of CSFs change in various stages of an e-business model's life cycle?

ii) Does the life cycle stage affect the importance of a specific CSF?

5.4.1 Results of Paper IV

The outcome of the paper strongly indicates that there are significant differences in the appearance of various CSFs during the four e-business model's life cycle stages. Some of the CSFs are likely to be emphasized in the early stages of the life cycle whereas others are essential in the latter part of the life cycle. In addition, the business context seems to affect what CSFs are selected as crucial. Hence, these interesting results enable us to give both theoretical and managerial implications.

The theoretical outcome of the research can be divided into three issues. First, we have combined the CSFs and the life cycle model for the first time as a way to evaluate e-business models within IS. Both concepts are well-known and recognized in several academic studies, regardless the academia or the school of thought. Second, synchronizing the two concepts gives us an opportunity to underpin the characteristics of an e-business model's life cycle, as well as to gain a new insight and understanding of the nature of e-business models. Third, the customer type (either B2B or B2C), the position in the value chain, and the service or product-orientation seem to affect CSFs that are chosen as essential in the four stages of an e-business model's life cycle.

The managerial implications are obvious. Results regarding the importance of various CSFs in each stage of an e-business model's life cycle may offer practical insights for the managers. It is crucial to note that CSFs will change as an e-business model matures. In other words, the focus areas are different in the early stage of an e-business model's life cycle compared to the latter stages of the life cycle. The results may also be

useful for the venture capitalists and entrepreneurs evaluating or planning new e-business models.

5.5 Paper V: Exploring the Determinants of Successful E-Business Offerings

Paper V (Horsti, Penttinen, Saarinen, and Korhonen, 2006) studies the CSFs, focusing on the offering component of an e-business model (Hedman and Kalling, 2003). The offering component consists of nine initial CSFs that are further analyzed by re-categorizing them into four principal components: quality, customization, ease-of-use, and the wideness of the product/service offering. In addition, these principal components are tested against contextual variables, including the type of business unit, type of customer, and technology experience. The conceptual framework of the study is presented in Figure 13.

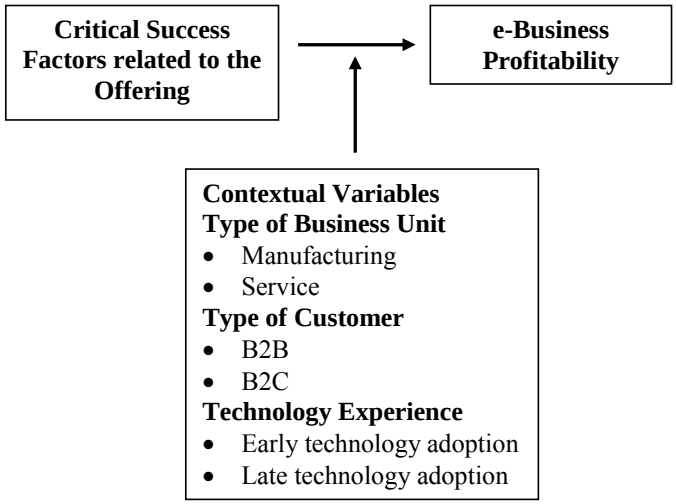


Figure 13. Conceptual framework of the study

In the paper, the business unit's e-business profitability is explained as a dependent variable comparing the effects of the independent variables.

5.5.1 Results of Paper V

Our results indicate that - overall - the quality of the market offering has a positive effect on the electronic business profitability of the business unit. This result was consistent through all the contextual variables. In other words, a business unit, which has a high-quality product or a high-quality service, can conduct electronic business with greater profitability than units with low-quality products and services. This is a rather intuitive result.

Customization has no significant explanatory power over the overall model. However, we found a strong positive effect on the electronic business profitability of manufacturing units, B2B firms and early adopters. According to our results, manufacturing units and B2B firms can derive higher electronic profitability by customizing their market offering for their customer companies. Obviously, customizing the market offering incurs costs to companies. Making these investments and customizing the market offering to each customer makes sense in the B2B market. By customizing the market offering, the supplier does more for the customer and thereby allows the customer to off-load some work. According to our results, this can be done in the B2B market at a profit. On the other hand, service units and B2C firms should be wary of over-customizing their market offering. We argue that in the B2C market companies should leave the customization process to the consumers, providing them with the necessary tools for customization. For example, the Financial Times has given its customers the possibility to customize their own personal web page in the internet portal. This requires a simple log-in procedure and the customers can do the customization themselves. This finding is consistent with Anderson (2002) where he examines pareto-efficient agreements between buyers and sellers and concludes that seeking Pareto-efficient agreements only make sense in markets where negotiation and customized agreements are possible (such as in B2B markets). Similarly, here, we posit that customizing each offering to individual customers on the B2C market may be too costly, and thus, customization makes sense mainly in the B2B market. In addition, we found that early adopters can use customization features more profitably than late adopters. The early adopters have experience in electronic business activities (experience in implementing electronic business; better knowledge of customer needs

and wants) and can leverage this experience for better customization than the late adopters of technology.

According to our results, ease-of-use of the offering did not have explanatory power over the profitability construct. This is rather surprising because, in previous research, especially in the electronic business context, ease-of-use has emerged as a factor that influences the success of Internet commerce (Keeney, 1999; Weill and Vitale, 2001; Torkzadeh and Dhillon, 2002). These previous studies used consumer data in determining the electronic business success factors, whereas we used empirical data from companies. This is reflected in our results. Clearly, consumers are more concerned about the usability issues, whereas companies providing these electronic business products and services prioritize quality and customization issues.

A broad offering of products/services has a positive effect on electronic business profitability. Again, as with the quality component, this was consistent through all the contextual variables. Our results suggest that if a business unit wants to succeed, it needs to have a wide range of products and services to offer to the market. This finding is consistent with Torkzadeh and Dhillon (2002) who found that Internet product choice has a significantly positive effect on Internet commerce success. They considered Internet product choice as a measure of means objective with items such as "I like a broad choice of products" and "I like the ease-of-comparison shopping".

6. Discussion and conclusion

In the following section, the summary of the dissertation is discussed. In addition, the suggested contributions of the study for academics and practitioners are presented and the limitations of the study are recognized. Finally, the dissertation is concluded by suggesting the areas of future research.

6.1 Summary

The objectives of the study were defined as, first, to identify the most essential constructs of an e-business model. Second, the objective was to develop an evaluation tool for the e-business models based on the critical success factors and life cycle model. Finally, the objective of the study was to also validate the evaluation tool with empirical data.

In the study, the business model concept was derived from resource based view (Barney, 1991) and transaction cost economics (Williamson, 1975). Moreover, electronic business, and especially the Internet, was regarded as a relevant part in enabling the key operations and processes of the e-business model. After the definition and identification of the business model concept, the evaluation of these models is enabled. The evaluation of business models is recognized as an essential area that needs to be studied further. The evaluation of business models seems to be an interest area both for academics and practitioners. Based on the evaluation, a company can set and follow up the defined objectives and goals for a business model, compare the competitiveness of a business model to other business models in the market, continuously develop a business model, as well as prove the success of a business model. The evaluation of business models is accomplished with the evaluation tool developed for e-business models. The evaluation tool is based on the CSFs and life cycle model indicating the focus areas of a company. Moreover, the aim of the evaluation tool is to support the e-business value creation.

6.2 Contribution of the study

In this section, theoretical and practical contribution is presented. The key contribution of the study is the evaluation tool for e-business models.

6.2.1 Theoretical contribution

During the past decade, several studies in the area of IS have mainly focused on the constructs of the business model concept. This is justified in the case of any concept in its initial stage. However, according to Pateli and Giaglis (2003), along the maturity of the business model studies, including e.g. the definition of the term and identifying the components of a business model, the evaluation of business models is becoming relevant to study. The evaluation of e-business models is the foundation for all the contribution of this study and this dissertation is among the first to consider the evaluation in the e-business model context. In addition, the research provides contribution by positioning the business model concept among the other concepts of strategic management, marketing, and organizational sciences.

This study contributes to strategic management, marketing, organizational, and information system science literatures by listing the most relevant prerequisites and measures of success factors from the previous literature sources and interviews. In addition, utilizing survey samples, the importance of each factor is tested indicating the priorities between the variables. The success measures are also integrated with the life cycle model explicating the various focus areas which are likely to change, depending on the stage of an e-business model's life cycle.

To conclude, the main contribution of this dissertation is an insight and evaluation tool for e-business models. The evaluation of e-business models is based on critical success factors and life cycle model. Contribution is enabled and supported with the empirical data of the reported studies including both qualitative and quantitative research approaches. This confirms the theoretical contribution of this dissertation by showing the usability of pluralism in the area of IS.

6.2.2 Practical contribution

For practitioners, the study explains and helps to gain an understanding of the business model concept. The term has been especially used in daily business magazines and financial news to mainly describe the plans of dot.com start-ups.

However, the study focuses on the evaluation of business models. The evaluation tool for e-business models is introduced, and that tool can be used also by practitioners in measuring the level of success and giving a summarized list of issues that should be taken into account in a particular e-business model. For the practitioners, the tool may be useful in creating new e-business model ventures by providing a checklist that can be prioritized. Moreover, the tool is also a way to compare a new business model to the existing business models in the market. The business model evaluation has been performed by financial companies or other similar parties that are interested in studying business models in making their pre-studies and decisions concerning the financial arrangements and acquisitions. The business model evaluation tool can also be utilized in making new agreements, for example, with content providers and other partners. In this case, the evaluation would support revenue and cost allocations according to the separate roles within the cooperation.

The results also give practical advice for performing both product and service-oriented businesses in the context of B2B or B2C customers. The characteristics of an offering, being customization, quality, wide range of products/services, as well as the ease-of-use, have an effect on the profitability gained. For example, customizing each offering to the individual customers in the B2C market may be too costly, and, therefore, customization mostly makes sense in the B2B markets.

6.3 Limitations

Like most studies, the research reported in the dissertation is subject to limitations. First, data gathering focused only on the Finnish companies operating in local and international markets. Paper III was an exception to this because it studied the Scandinavian portal business models. However, a geographically larger sample with

cross-cultural data would give a richer picture of the subject matter. This would also lead to more generally applicable results.

Second the sample size in the survey consisted of 60 firms and 111 respondents. Data from the sample was utilized in three papers attached to this dissertation. Hence, we find the sample size adequate for this type of exploratory research, and further research should collect data from a larger group of companies.

Third, although we sent out an equal number of questionnaires to large companies (top 30 Finnish firms), the number of responses received from the companies varies. For example, we received nine responses from the Finnish Postal Service and two from Nokia. However, we believe that our findings may be generalized with certain care.

Fourth, the evaluation tool introduced in Paper I is mainly a checklist for the e-business model evaluation. Hence, a more enhanced version of the evaluation tool will be needed especially when bringing the tool into practice. At this stage, the evaluation tool requires company-specific iteration before the tool is put into operation.

Fifth, in Paper III, only one unit of analysis was used, i.e. one interviewee from each of the case companies. Based on the data, the reader should be careful in making generalizations regarding the portals and community-based e-business models.

6.4 Suggestion for further research

Since the business model concept is rather new, and researchers have requested studies on the topic of business models, further research seems justified. One of the aims of the dissertation is to continue the discussion regarding e-business models by focusing on the evaluative view instead of studying the static nature of the business model concept. We regard the topic of e-business models as a relevant research topic also in future studies. Obviously, the recognized limitations in the earlier section of the dissertation give a recommended direction for further studies.

The main suggestion for further study is to continue the development of the evaluation tool introduced in Paper I. First, the evaluation tool needs to be validated by using a larger data sample consisting of more cross-cultural countries. The selection of a particular industry is also recommended. Second, one option is to test the evaluation tool using different research methods. For instance, an action research as a selected research method would give valuable results from an organization in which the evaluation tool has been used for a longer period of time. These practical insights would help to enhance the evaluation tool before enlarging the usage of the tool to companies. Third, the evaluation tool might require software with a flexible user interface with which the evaluation tool would be more valuable in analyzing various business models. In this case, the evaluation tool would require business model specific data as an input before concluding the analysis of the model studied. The software would be useful for consultants and investors as one supporting data source in analyzing different business models on the market.

7. References

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8. Appendices

APPENDIX 1 - Literature linkage of evaluation tool

A) Prerequisites of success (PoS) factors (not prioritised)

	Factors from interviews	Factors from literature	Literature source
	1) Customer component		
1	E-business model related customers are recognized	Identify issues and event that customer use as triggers to access the company	Weill&Vitale (2001)
2	E-business model related customers have an ability for increased independence e.g. through self-service	PC based customer support alone	Torkzadeh&Dhillon (2002)
3	E-business model has an ability to reach a targeted customer segment	Find and retain customers who share a common interest	Weill&Vitale (2001)
4	E-business model related customer needs are identified and understood	Responsiveness to user needs Capture data on customer needs	Teo&Ang (1999) Weill&Vitale (2001)
5	E-business model achieves trust among its customers	Trust Trusted brand	Jarillo (1995); Torkzadeh&Dhillon (2002) Weill&Vitale (2001)
6	Customer service of e-business is always available (7/24/365)	Availability	DeLone&McLean (2003)
7	Time-saving is enabled for the e-business model related customers	Time savings	DeLone&McLean (2003)
8	E-business skills are improved together with the e-business model related customer	Give new ideas to customer	Torkzadeh&Dhillon (2002)
9	E-business model related customer data is gathered and utilized	Own more of the customer data in the domain than any other player Leverage member profile data with service providers	Weill&Vitale (2001) Weill&Vitale (2001)
10	E-business model related customer service is well-functioning and responses quickly to its customers' requests	Availability of customer service Response time Increase level of completeness over time	Torkzadeh&Dhillon (2002) Saarinen (1996); DeLone&McLean (2003) Weill&Vitale (2001)
11	E-business model related customers are encouraged to use electronic channels (e.g. Internet)	Maximise good shopping experience Richness of experience	Keeney (1999); Torkzadeh&Dhillon (2002) Weill&Vitale (2001)
12	IT security is guaranteed for the e-business model related customers	Security Adequate security Easy and secure payments Privacy and security of member data	Keeney (1999); Torkzadeh&Dhillon (2002); DeLone&McLean (2003) Weill&Vitale (2001) Weill&Vitale (2001) Weill&Vitale (2001)
	2) Competition component		
13	Decisions regarding the competitive strategy of e-business model are evident being either cost leadership or differentiation strategy	Competitive advantage Competitive opportunity	Porter (1985&2001) McFarlan (1984)
	3) Offering component		
14	E-business model related offering is easily and geographically widely accessible	Extent of use Availability Accessibility Maximised access	Saarinen (1996) DeLone&McLean (2003) Torkzadeh&Dhillon (2002) Keeney (1999)

15	The quality of products and services in e-business model is good	Quality	Doyle (1992); Saarinen (1996); DeLone&McLean (2003)
		Product quality	Venkatraman&Ramanujam (1986); Jenster (1987); Keeney (1999); Torkzadeh&Dhillon (2002)
		High quality of IT systems	Kwon&Zmud (1987)
16	E-business model related offering is priced profitably	Price/performance	Saarinen (1996)
		Transfer pricing management	Weill&Vitale (2001)
17	E-business model related processes and offering are easy to use	Ease-of-use	Saarinen (1996); Keeney (1999); Torkzadeh&Dhillon (2002)
		User friendliness	Saarinen (1996)
		Clarity	Saarinen (1996)
		Usability	DeLone&McLean (2003)
		Fast and efficient service	Weill&Vitale (2001)
		Ease-of-use	Weill&Vitale (2001)
18	E-business model related offering portfolio is well-managed in each life-cycle stage	Development phases	Saarinen (1996)
19	E-business model related offering is continuously improved based on customer feedback	Capture data on customer needs	Weill&Vitale (2001)
20	E-business model related offering is targeted and personalized based on customer desires	Personalisation	DeLone&McLean (2003)
21	E-business model related offering is clear	Good product offering	Torkzadeh&Dhillon (2002)
22	The range of e-business model related offering is large	Large range of product options	Keeney (1999); Torkzadeh&Dhillon (2002)
	4) Activities and organisation component		
23	E-business model and its offering has a strong brand	Managing brand and channel conflicts	Weill&Vitale (2001)
		Trusted brand recognised at all places in the value chain	Weill&Vitale (2001)
24	E-business model related operations are reliable	Reliability	Saarinen (1996); DeLone&McLean (2003)
25	E-business model can be regarded as an innovative forerunner in terms of products, services and technology	Able to keep advances in IT	Teo&Ang (1999)
		Generation of new ideas	Shank, Niblock&Sandalls (1973); Venkatraman&Ramanujam (1987b)
		Innovation	Schumpeter (1934); Taylor (1975); Jenster (1987); Venkatraman&Ramanujam (1987b)
26	E-business model and its offering is constantly developed	Development process	Saarinen (1996)
27	E-business model's operations and processes are cost efficient	Efficiency	Saarinen (1996)
		Cost savings	Keeney (1999); Torkzadeh&Dhillon (2002); DeLone&McLean (2003)
		Technological efficiency	Venkatraman&Ramanujam (1986)
		Marketing effectiveness	Venkatraman&Ramanujam (1986)
		Productivity	Hitt&Brynjolfsson (1996)
		MIS effectiveness	Cooper&Quinn (1993)
		Cost effectiveness of IS	Miller&Doyle (1987)
		Organisational effectiveness	Millman&Hartwick (1987)
		Cost reductions	Rivard&Huff (1984)

28	E-business model related operations and activities are managed in terms of right-timing	Timeliness Up-to-dateness Accuracy and timely products Provide reliable, timely content in the right format and at the right place	Saarinen (1996) Saarinen (1996) Torkzadeh&Dhillon (2002) Weill&Vitale (2001)
29	E-business model related activities and organization reacts quickly to relevant changes in its business environment	Environmental concerns Turbulence of environment Flexibility to adapt changes Minimise environmental impact Scale up infrastructure quickly Strategic flexibility	Doyle (1992) Weill (1992) Venkatraman&Ramanujam (1987b) Keeney (1999); Torkzadeh&Dhillon (2002) Weill&Vitale (2001) Hamel (2000)
30	E-business model related organization's culture and atmosphere are open	Free communication	Ang&Teo (1997)
31	E-business model related organization has readiness to implement new technologies in its e-business	Superior IT capability	Bharadwaj (2000)
32	E-business model related organization has an ability to solve e-business related problems efficiently	Identify key problem areas	Venkatraman&Ramanujam (1987b)
	5) Resources component		
33	E-business model related personnel is highly experienced and possesses good capabilities and skills	IS knowledge Business knowledge Qualified personnel Experience of IT Know-how Core competence	Saarinen (1996) Saarinen (1996) Ang&Teo (1997) Weill (1992) Teece (1998) Prahalad&Hamel (1990); Hamel (2000)
34	E-business model related personnel is highly motivated and committed	Commitment Management commitment Motivated personnel Management support Motivation of management	Saarinen (1996); Ang&Teo (1997) Kwon&Zmud (1987); Weill (1992); Saarinen (1996); Teo&Ang (1999) Doyle (1992) Ang&Teo (1997); Teo&Ang (2001) Hall (1977); Venkatraman&Ramanujam (1987b)
35	E-business model related software and hardware are reliable	Performance IT-infrastructure instability	Saarinen (1996) Han&Noh (1999)
	6) Suppliers component		
36	E-business model related management accomplishes well networking and partnering relations	Internal partnership between units Share benefits equitably with partner Achieves critical mass Compile and deliver accurate and timely statements of services and benefits provided	Teo&Ang (1999) Weill&Vitale (2001) Weill&Vitale (2001) Weill&Vitale (2001)
37	E-business model related operations achieves trust among its business partners	Trust	Jarillo (1995); Torkzadeh&Dhillon (2002)
	7) Scope of management component		
38	E-business model related management handles the multi-channel environment including both the traditional and electronic channels	Enabled access via various channels Managing brand and channel conflicts Balance availability of multiple channels with cost of supporting them	Torkzadeh&Dhillon (2002) Weill&Vitale (2001) Weill&Vitale (2001)
39	E-business model related management is committed to e-business development	Management commitment Skills of management	Teo&Ang (2001) Teo&Ang (1999)

40	Systematic risk management minimizing the vulnerability of e-business model is regarded relevant	Minimised risk Anticipation of surprises and crisis Avoiding problem areas	Doyle (1992) Ansoff (1984); Venkatraman&Ramanujam (1987b) Shrivatsava&Grant (1985)
41	E-business model related management has the ability to identify new e-business opportunities	Identify new business opportunities Predicting future trends	Venkatraman&Ramanujam (1987b) Paul, Donavan&Taylor (1978)
42	E-business related management acknowledges both cultural and generational differences when developing its e-business	Corporate culture	Barney (1991)

B) Measures of success (MoS) factors (not prioritised)

	Factors from interviews	**Factors from literature**	**Literature source**
1	E-business model related customers are satisfied	User satisfaction Good user-IS relationship User satisfaction Consumer surplus Customer satisfaction	DeLone&McLean (2003) Ang&Teo (1997) Weill (1992) Hitt&Brynjolfsson (1996) Keeney (1999); Osterwalder&Pigneur (2002); Torkzadeh&Dhillon (2002)
2	E-business model related customers are loyal	Loyalty Lock-in	Osterwalder&Pigneur (2002) Shapiro&Varian (1999)
3	E-business model related business has favourable number of customers	Number of site visits Number of visitors Dominance in the market Customer awareness Own the customer relationship Critical mass of users	DeLone&McLean (2003) Eisenmann&Pothen (2000) Damsgaard *et al*. (2004) Weill&Vitale (2001) Weill&Vitale (2001) Weill&Vitale (2001)
4	E-business model related benefits are shared with customers	Enhanced customer productivity Present the information to customers in clear and innovative ways that provide value	Torkzadeh&Dhillon (2002) Weill&Vitale (2001)
5	E-business model related customers' search costs are reduced	Searching costs	DeLone&McLean (2003)
6	E-business model related partnerships are successful	Establish a network of allies through which content is disseminated	Weill&Vitale (2001)
7	E-business model related offering has reached market leadership	Market share Leader in the domain	Kaspar&Cerveny (1985); Venkatraman&Ramanujam (1986); Doyle (1992); Afuah&Tucci (2001) Weill&Vitale (2001)
8	E-business model related business is profitable	Economic value Profitability Profit contribution	Porter (2001) Benbasat&Dexter (1985); Benbasat&Dexter (1986); Venkatraman&Ramanujam (1986); Venkatraman&Ramanujam (1987a); Doyle (1992); Hitt&Brynjolfsson (1996); Saarinen (1996); Hoch *et al* (1999); Afuah&Tucci (2001) Rivard&Huff (1984)
9	E-business model related business has an adequate turnover	Turnover Revenue	Afuah&Tucci (2001) Porter (1985)

10	E-business model related business is growing in terms of profits	Business growth Profit growth	Doyle (1992) Venkatraman&Ramanujam (1987a)
11	E-business model related business is growing in terms of turnover	Incremental additional sales Sales growth Business growth Revenue growth Increased repeat purchase rate Increased size of transaction	DeLone&McLean (2003) Cron&Sobol (1983); Venkatraman&Ramanujam (1986); Venkatraman&Ramanujam (1987a) Doyle (1992) Hoch *et al* (1999) Weill&Vitale (2001) Weill&Vitale (2001)
12	E-business model related business achieves strategic goals	A set of organisational goals	Teo&Ang (1999)
13	E-business model related business has a good market value	Market value	Kaspar&Cerveny (1985); Venkatraman&Ramanujam (1986)
14	E-business model related business explicates savings and benefits	Cost savings Reduced customer acquisition costs Cost reduction	March&Smith (1995); Saarinen (1996); DeLone&McLean (2003) Weill&Vitale (2001) Weill&Vitale (2001)
15	E-business model related business has good return on investment	ROI	Venkatraman&Ramanujam (1986)

APPENDIX 2 - Interview guide of Paper I for 17 managers in 5 firms

1. TAUSTATEKIJÄT

Haastateltava:

- Nimi:
- Titteli:
- Tehtävä:

Yritys yleisesti:

- Markkinaosuus Suomessa
- Yrityksen omistuspohja
- Yrityksen henkilöstö
- Vuotuinen investointi liiketoiminnan kehittämiseen
- B2C ja B2B asiakkaiden määrät ja liikevaihdon jakautuminen
- Yrityksen luonne (Bricks & Mortar, Clicks and Mortar ja Pure online)
- Pystyykö yritys toimimaan ilman IT-infraa? Onko IT-infrassa kriittisiä osia?

Yrityksen sähköinen liiketoiminta:

- Yrityksen ja sähköisen liiketoiminnan historia lyhyesti ja tärkeimmät virstanpylväät (milloin perustettu?)
- Yrityksen ja sähköisen liiketoiminnan visio ja tavoitteet lyhyesti
- Onko sähköinen liiketoiminta itsenäinen liiketoimintayksikkö konsernissa ja mikä on sen sijainti organisaatiossa?
- Yrityksen ja sähköisen liiketoiminnan vuotuinen liikevaihto
- Sähköisen liiketoiminnan henkilöstön määrä
- B2C ja B2B asiakkaiden määrät ja liikevaihdon jakautuminen sähköisissä liiketoiminnassa
- Tärkeimmät liiketoimintayksiköt, jotka mahdollistavat elektronisen liiketoiminnan

- Sähköisen kanavan rooli monikanavaympäristössä, muut oleellisimmat kanavat yrityksen ja asiakkaan välissä
- Mitä ja millä tekijöillä yritys mittaa sähköistä liiketoimintaa

2. MENESTYS (SUCCESS)

Menestystekijät mahdollistavat pysyvän kilpailuedun! – Sustainability

- Kuinka määrittelet menestyksen (success)?
- Yleiset menestystekijät?
- Toimialan yleiset menestystekijät?
- Yrityksen kriittiset menestystekijät?
    - Organisaation (SBU-jaottelutasolla)
    - Prosessit (talous, tieto ja tuote/palvelu prosessit)
        - Asiakkuudenhallinta
    - Infra (IT, työkalut, jne)
- Mitkä yo. menestystekijöitä mahdollistaa menestyksen (kyntäminen), ja mitkä ovat menestyksen tuloksia (sadonkorjuu)?
- Miten menestystekijät ovat muuttuneet ja mitkä tekijät ovat ajaneet muutokseen ajan saatossa?
- Kanavien erot/yhtäläisyydet liiketoiminnan menestyksen kannalta

3. TALOUDELLISET TEKIJÄT

- Mistä tuotteista/palveluista sähköinen liiketoiminta pääasiallisesti generoi liikevaihtoa?
    - Miten paljon?
- Onko sähköinen liiketoiminta kannattavaa lyhyellä/pitkällä aikavälillä?
    - Koska
    - Miten kannattava
- Onko tuotteiden/palveluiden kannattavuutta analysoitu?

4. TEKNOLOGIA

- Mitkä ovat pääasialliset elektroniset teknologiat, joiden avulla yritys on yhteydessä asiakkaisiinsa?

- Onko asiakkaalla mahdollisuus valita vapaasti haluamansa kanavan, jonka kautta hän on yhteydessä yritykseen?
- Onko teknologia omasta takaa vai ulkoistettu?
- Miten teknologisiin muutoksiin valmistauduttu?

5. KILPAILU

- Ketkä ovat yrityksen pahimmat kilpailijat Suomessa?
- Kuinka kuvailet Suomen kilpailutilannetta?
- Onko kilpailijat edistyksellisiä elektronisessa liiketoiminnassaan verrattuna yritykseenne?
- Toimialan voimat
    - uudet toimijat
    - korvaavat tuotteet/palvelut
    - alihankkijat
    - asiakkaan vaatimukset
    - toimialan kilpailu

6. YHTEISTYÖ

- Yrityksen oleellisimmat yhteistyökumppanit (arvoketjussa ennen yritystä ja yrityksen jälkeen)?
- Mitkä sähköisen liiketoiminnan osat on ulkoistettu?
    - Miksi
    - Ongelmat
    - Hyödyt

7. STRATEGIOIDEN TOTEUTUS

- Miten yritys houkuttelee asiakkaita sähköiseen liiketoimintaansa?
- Mikä on yrityksen kilpailustrategia?

8. TAVOITTEET JA PÄÄMÄÄRÄT

- Mitkä ovat elektronisen liiketoiminnan päätavoitteet?
    - Miten mitataan?

- Mitkä ovat elektronisen liiketoiminnan liikevaihdolliset ja tulostavoitteet
  - Miten mitataan?
- Mitkä ovat elektronisen liiketoiminnan teknologiset tavoitteet kanavittain?
  - Miten mitataan?
- Mitkä ovat elektronisen liiketoiminnan tavoitteet tuotteiden/palveluiden osalta?
  - Miten mitataan?

9. LESSONS LEARNED

- Määrittele termi ”Business model”
- Mitä käytännön vinkkejä antaisit muille elektronisen liiketoiminnan harjoittajille?
- Missä ollaan onnistuttu (DO) – kolme kpl elektronisessa liiketoiminnassa?
  - Miksi
- Missä epäonnistuttu (DONT DO) - kolme kpl elektronisessa liiketoiminnassa?
  - Miksi
  - Onko toteutettu ja korjattu asiat
- Elektronisen liiketoiminnan kovimmat haasteet?

APPENDIX 3 - Survey questionnaire, Part I (Papers II and IV) and Part II (Paper V)

1. Vastaajan taustatiedot

Vastaajan antamia tietoja käytetään ainoastaan akateemiseen tutkimukseen eikä tietoja luovuteta suoramarkkinointitarkoituksiin.

1.1 Nimi		
1.2 Työosoite		
1.3 Työpuhelin		
1.4 Työsähköposti		
1.5 Sukupuoli	❑ Mies	❑ Nainen
1.6 Ikäryhmä	❑ Yli 60 vuotta ❑ 51-60 vuotta ❑ 41-50 vuotta	❑ 31-40 vuotta ❑ 21-30 vuotta ❑ Alle 20 vuotta
1.7 Koulutustaso	❑ Yliopisto ❑ Ammattikorkeakoulu ❑ Kauppaopisto ❑ Ammattikoulu	❑ Lukio ❑ Peruskoulu ❑ Muu _____
1.8 Asema yrityksessä	❑ Ylin johtotaso ❑ Johtotaso ❑ Päällikkötaso	❑ Toimihenkilötaso ❑ Asiantuntija, konsultti ❑ Muu _____
1.9 Työkokemus vuosina	❑ Yli 30 vuotta ❑ 20-29 vuotta ❑ 10-19 vuotta	❑ 5-9 vuotta ❑ 1-4 vuotta ❑ 0-1 vuotta
1.10 Kokemus elektronisesta liiketoiminnasta vuosina	❑ Yli 30 vuotta ❑ 20-29 vuotta ❑ 10-19 vuotta	❑ 5-9 vuotta ❑ 1-4 vuotta ❑ 0-1 vuotta

2. Yrityksen taustatiedot

Vastausohje: Pyrkikää vastaamaan kysymyksiin **koko yrityksenne näkökulmasta**. Tässä osiossa ainoastaan kysymys 2.3 keskittyy edustamiinne tuotteisiin ja palveluihin.

2.1 Yrityksenne nimi	
2.2 Yrityksenne vuotuinen liikevaihto (MILJ. EUR)	

2.3 Lyhyt kuvaus edustamastanne liiketoiminnasta, tuotteista ja palveluista

2.4 Arvioikaa yrityksenne kannattavuutta viimeisen kolmen vuoden aikana

Erittäin heikko — Erittäin hyvä

1 2 3 4 5 6 7

2.5 Onko kilpailutilanne yrityksenne päätoimialalla muuttunut viimeisen kolmen vuoden aikana?

Helpottunut — Kiristynyt

1 2 3 4 5 6 7

2.6 Kumpi seuraavista kuvaa koko yrityksenne liiketoiminnan strategiaa paremmin?

- ❑ Kustannusjohtajuus eli yritys pyrkii kilpailemaan ensisijaisesti tuotteiden hinnoilla ja/tai tuotantoketjun tehokkuudella
- ❑ Tuotedifferointi eli yritys pyrkii kilpailemaan erilaistamalla tuotteensa kilpailijoiden tuotteista

3. Yrityksen elektroninen liiketoiminta

Vastausohje: Pyrkikää vastaamaan kysymyksiin **koko yrityksenne näkökulmasta**.

Määritelmä: Tässä tutkimuksessa **elektronisella liiketoiminnalla tarkoitetaan** yrityksen sisäistä tai ulkoista toimintaa (esim. transaktioita, tiedon välitystä, kommunikointia), jossa merkittävässä roolissa on elektronisiin standardeihin perustuva välitysmuoto, kuten EDI ja Internet.

3.1 Minä vuonna yrityksenne alkoi käyttää seuraavia elektronisen liiketoiminnan teknisiä ratkaisuja?

1	EDI / OVT	v. _____
2	Intranet	v. _____
3	Extranet	v. _____
4	Internet	v. _____
5	Muu, mikä:	v. _____

3.2 Mikä/mitkä seuraavista kuvaa koko yrityksenne elektronisen liiketoiminnan strategiaa paremmin?

- ❑ Kasvattaa voimakkaasti elektronisen liiketoiminnan liikevaihtoa ja/tai transaktioiden määrää seuraavien vuosien aikana ilman kannattavuustavoitetta
- ❑ Kasvattaa elektronisen liiketoiminnan kannattavuutta seuraavien vuosien aikana
- ❑ Parantaa koko yrityksen kannattavuutta ohjaamalla elektroniseen kanavaan sinne sopivat transaktiot ja suhteet

3.3 Kumpi seuraavista kuvaa koko yrityksenne elektronisen liiketoiminnan asiakaskuntaa liikevaihdollisesti mitattuna?

- ❑ B2B – yritysasiakkaat
- ❑ B2C – kuluttaja-asiakkaat

3.4 Arvioikaa koko yrityksenne elektronisen liiketoiminnan tämän hetken tilannetta

Täysin epäonnistunut — Täysin onnistunut

a) Yrityksen sisäisessä toiminnassa 1 2 3 4 5 6 7

b) Yrityksen ulkoisessa toiminnassa	1 2 3 4 5 6 7
c) Vaikutus liiketoimintaan kokonaisuutena	1 2 3 4 5 6 7

3.5 Miten paljon elektronisen liiketoiminnan tila on kehittynyt yrityksessänne?	Ei lainkaan … Erittäin paljon
a) Viimeisen vuoden aikana	1 2 3 4 5 6 7
b) Viimeisen kolmen vuoden aikana	1 2 3 4 5 6 7
c) Viimeisen viiden vuoden aikana	1 2 3 4 5 6 7
d) Viimeisen kymmenen vuoden aikana	1 2 3 4 5 6 7
3.6 Arvioikaa koko yrityksenne elektronisen liiketoiminnan kypsyyttä kilpailijoihinne verrattuna	Kilpailijat kehittyneempiä kuin oma yritys … Oma yritys kehittyneempi kuin kilpailijat 1 2 3 4 5 6 7
3.7 Arvioikaa koko yrityksenne elektronisen liiketoiminnan kannattavuutta	Erittäin heikko … Erittäin hyvä 1 2 3 4 5 6 7

SURVEY QUESTIONNAIRE PART I (Papers II and IV):

4. Elektronisen liiketoiminnan menestystekijöiden arviointi - Prerequisites of Success (PoS) factors

Vastausohje: Pyrkikää vastaamaan kysymyksiin **edustamanne elektronisen liiketoiminnan, tuotteen tai palvelun kannalta** eikä koko yrityksen näkökulmasta.

4.1 Arvioikaa **asiakkaisiin** liittyviä menestystekijöitä, jotka vaikuttavat elektronisen liiketoiminnan menestymiseen.	Ei tärkeä … Erittäin tärkeä
1) Tunnemme e-liiketoimintamme asiakkaat	1 2 3 4 5 6 7
2) Mahdollistamme e-liiketoiminnalla asiakkaidemme omatoimisuuden (esim. itsepalvelu)	1 2 3 4 5 6 7
3) Tavoitamme e-liiketoiminnassamme oikean asiakassegmentin	1 2 3 4 5 6 7
4) Tunnistamme ja ymmärrämme asiakkaidemme tarpeet e-liiketoiminnassa	1 2 3 4 5 6 7
5) Asiakkaamme pitävät e-liiketoimintaamme luotettavana ja varmana	1 2 3 4 5 6 7
6) E-liiketoimintamme asiakaspalvelu on aina tavoitettavissa (7/24/365), ja se toimii erinomaisesti	1 2 3 4 5 6 7
7) Asiakkaamme säästävät e-liiketoimintamme avulla aikaa	1 2 3 4 5 6 7
8) Kehitämme asiakkaamme osaamista e-liiketoiminnan avulla	1 2 3 4 5 6 7
9) Keräämme ja hyödynnämme e-liiketoiminnassamme asiakastietoa	1 2 3 4 5 6 7
10) E-liiketoimintamme avulla kannustamme asiakkaitamme käyttämään sähköisiä kanavia omassa asioinnissaan tai liiketoiminnassaan	1 2 3 4 5 6 7

11) Hallitsemme asiakaskommunikoinnin e-liiketoiminnassamme, esim. vastataamme pikaisesti asiakkaidemme kysymyksiin sähköpostitse	1 2 3 4 5 6 7
12) Takaamme e-liiketoiminnassamme asiakkaille tietoturvallisen asioinnin, esimerkiksi netissä	1 2 3 4 5 6 7

4.2 Arvioikaa **kilpailuun** liittyviä menestystekijöitä, jotka vaikuttavat elektronisen liiketoiminnan menestymiseen.	Ei tärkeä Erittäin tärkeä
1) E-liiketoimintamme tuotteet ja palvelut ovat vahvoja toimialamme kilpailussa	1 2 3 4 5 6 7

4.3 Arvioikaa **tarjoomaan** liittyviä menestystekijöitä, jotka vaikuttavat elektronisen liiketoiminnan menestymiseen.	Ei tärkeä Erittäin tärkeä
1) Tuotteemme ja palvelumme ovat helposti saatavilla e-liiketoimintamme avulla (esim. tarjoomamme on Internetissä ja/tai se on levittäytynyt kattavaksi myös maantieteellisesti)	1 2 3 4 5 6 7
2) E-liiketoiminnassamme tuotteet ja palvelut ovat laadukkaita	1 2 3 4 5 6 7
3) E-liiketoimintamme tuotteiden ja palveluiden hinnoittelu on tehty taloudellisesti ja hallitusti	1 2 3 4 5 6 7
4) E-liiketoimintamme tuotteet ja palvelut ovat helppokäyttöisiä	1 2 3 4 5 6 7
5) Hallitsemme e-liiketoimintamme tuoteportfolion kussakin elinkaaren vaiheessa (aloitus, kasvu, tasaantuminen, lasku)	1 2 3 4 5 6 7
6) Hyödynnämme saamaamme asiakaspalautetta e-liiketoimintamme tarjooman parantamiseksi	1 2 3 4 5 6 7
7) Kohdistamme e-liiketoimintamme tarjoomaa asiakkaiden toiveiden mukaan	1 2 3 4 5 6 7
8) E-liiketoimintamme tuotteet ja palvelut ovat selkeitä	1 2 3 4 5 6 7
9) E-liiketoimintamme tuote- ja palveluvalikoima on laaja	1 2 3 4 5 6 7

4.4 Arvioikaa **toimintaan ja organisaatioon** liittyviä menestystekijöitä, jotka vaikuttavat elektronisen liiketoiminnan menestymiseen.	Ei tärkeä Erittäin tärkeä
1) E-liiketoimintamme brändi on vahva	1 2 3 4 5 6 7
2) E-liiketoimintamme on vakaata ja uskottavaa	1 2 3 4 5 6 7
3) Olemme edelläkävijöitä toimialallamme e-liiketoiminnan tuotteissa, palveluissa ja käytetyissä teknologioissa	1 2 3 4 5 6 7

4) Kehitämme jatkuvasti e-liiketoimintamme tuotteita ja operatiivista toimintaamme	1 2 3 4 5 6 7
5) E-liiketoimintamme on kustannustehokasta	1 2 3 4 5 6 7
6) Hallitsemme oikean ajoituksen e-liiketoiminnassamme (esim. tuotelanseeraukset)	1 2 3 4 5 6 7
7) Vastaamme nopeasti oleellisiin muutoksiin e-liiketoimintamme toimintaympäristössä	1 2 3 4 5 6 7
8) Organisaatiossamme on avoin kulttuuri ja ilmapiiri	1 2 3 4 5 6 7
9) Meillä on valmius toteuttaa uusia teknologioita e-liiketoiminnassamme	1 2 3 4 5 6 7
10) Kykenemme nopeasti ratkaisemaan e-liiketoimintamme ongelmat	1 2 3 4 5 6 7

4.5 Arvioikaa **resursseihin** liittyviä menestystekijöitä, jotka vaikuttavat elektronisen liiketoiminnan menestymiseen.	Ei tärkeä	Erittäin tärkeä
1) Henkilöstömme on erittäin kokenut ja sillä on hyvä tietotaito		
2) Henkilöstömme on tyytyväinen, motivoitunut ja sitoutunut	1 2 3 4 5 6 7	
3) E-liiketoimintaamme tukevat järjestelmät ja ohjelmistot ovat luotettavia ja vakaita	1 2 3 4 5 6 7	

4.6 Arvioikaa **alihankkijoihin ja toimittajiin** liittyviä menestystekijöitä, jotka vaikuttavat elektronisen liiketoiminnan menestymiseen.	Ei tärkeä	Erittäin tärkeä
1) Verkotumme ja partneroidumme e-liiketoiminnassamme ja teemme ne hallitusti	1 2 3 4 5 6 7	
2) Myös partnerimme luottavat e-liiketoimintaamme	1 2 3 4 5 6 7	

4.7 Arvioikaa **johtamiseen** liittyviä menestystekijöitä, jotka vaikuttavat elektronisen liiketoiminnan menestymiseen.	Ei tärkeä	Erittäin tärkeä
1) Johdamme ja hallitsemme erinomaisesti monikanava-ympäristömme sekä perinteisten (toimisto, myymälä jne) että elektronisten kanaviemme (web, EDI jne.) kautta	1 2 3 4 5 6 7	
2) Johtomme on sitoutunut e-liiketoiminnan kehittämiseen	1 2 3 4 5 6 7	
3) E-liiketoimintamme riskienhallinta on systemaattista	1 2 3 4 5 6 7	
4) Tunnistamme e-liiketoimintamme markkinapotentiaalin	1 2 3 4 5 6 7	

5) Ymmärrämme yrityksemme sisäisen e-liiketoiminnan kehittämisessä niin kulttuurilliset kuin sukupolvien väliset erot	1 2 3 4 5 6 7

5. Tulokset menestymisestä - Measures of success (MoS) factors

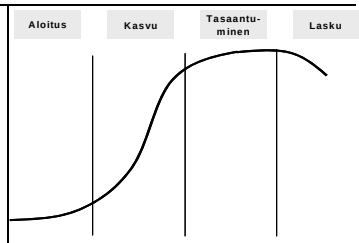
Vastausohje: Pyrkikää vastaamaan kysymyksiin **edustamanne elektronisen liiketoiminnan, tuotteen tai palvelun kannalta** eikä koko yrityksen näkökulmasta.

5.1 Arvioikaa seuraavia tekijöitä, jotka ovat elektronisen liiketoiminnan menestymisen tuloksia.	Ei tärkeä						Erittäin tärkeä
1) E-liiketoimintamme asiakkaat ovat tyytyväisiä	1	2	3	4	5	6	7
2) E-liiketoimintamme asiakkaat ovat pitkäaikaisia ja uskollisia	1	2	3	4	5	6	7
3) E-liiketoimintamme asiakkaita on lukumäärällisesti paljon, ja olemme saavuttaneet ns. "kriittinen massan"	1	2	3	4	5	6	7
4) Jaamme asiakkaidemme kanssa e-liiketoiminnan avulla saavutetut taloudelliset hyödyt esim. hinnoittelun kautta	1	2	3	4	5	6	7
5) Asiakkaidemme kannalta tiedon etsimiskustannukset ovat laskeneet	1	2	3	4	5	6	7
6) Olemme onnistuneet erittäin hyvin partnereidemme kanssa yhteistyössä	1	2	3	4	5	6	7
7) E-liiketoimintamme tuotteet ja palvelut ovat saavuttaneet markkinajohtajuuden ja kilpailuedun toimialallamme	1	2	3	4	5	6	7
8) E-liiketoimintamme on erittäin kannattavaa	1	2	3	4	5	6	7
9) E-liiketoimintamme liikevaihto on erinomainen	1	2	3	4	5	6	7
10) E-liiketoimintamme voitto on kasvanut ja kasvaa yhä	1	2	3	4	5	6	7
11) E-liiketoimintamme liikevaihto on kasvanut ja kasvaa yhä	1	2	3	4	5	6	7
12) Saavutamme e-liiketoiminnassamme sille asetetut strategiset tavoitteet	1	2	3	4	5	6	7
13) Parannamme e-liiketoimintamme avulla koko yrityksen markkina-arvoa	1	2	3	4	5	6	7
14) Saamme e-liiketoiminnallamme aikaan kustannussäästöjä ja muita hyötyjä omassa yrityksessä	1	2	3	4	5	6	7
15) E-liiketoimintamme sijoitetun pääoman tuottoaste on erinomainen	1	2	3	4	5	6	7

SURVEY QUESTIONNAIRE PART II (Paper V):

6. Tekijät liiketoimintamallin elinkaaren eri vaiheissa

Vastausohje: Pyrkikää vastaamaan kysymyksiin **edustamanne elektronisen liiketoiminnan, tuotteen tai palvelun kannalta** eikä koko yrityksen näkökulmasta.

6.1 Arviokaa seuraavien tekijöiden merkitystä elektronisen liiketoiminnan liiketoimintamallin* elinkaaren** vaiheessa: Aloitus, Kasvu, Tasaantuminen tai Lasku *) Liiketoimintamalli on kuvaus yrityksen asiakkaiden, toimittajien ja partnereiden välisestä ansaintalogiikasta, ja se määrittää tuote- ja palvelu-, tieto- ja rahavirrat osallistuvien osapuolten kesken. **) Elinkaari kuvaa esim. tuotteen ja liiketoiminnan vaiheittaista kehitystä ja kypsymistä tietyn ajan kuluessa. Vaiheet ovat aloitus, kasvu, tasaantuminen ja lasku.				
ESIMERKKI TEKIJÄ A		X	X	
ESIMERKKI TEKIJÄ B	X			
ESIMERKKI TEKIJÄ C	X	X	X	X

1) Henkilöstön a) kokemus				
b) osaaminen				
2) Innovatiivinen edelläkävijyys				
3) Asiakastiedon kerääminen ja hyödyntäminen e-liiketoiminnassa				
4) E-liiketoimintaa tukevien järjestelmien ja ohjelmistojen toimintavarmuus				
5) Hallittu ja edistyksellinen monikanavaympäristö				
6) E-liiketoiminnan riskienhallinta				
7) Verkottumisen ja partneruuksien hallitseminen				
8) E-liiketoiminnan ja sen tarjooman toimintavarmuus ja laatu				
9) Tuotteiden ja palveluiden selkeys ja helppokäyttöisyys				
10) Brändin vahvuus				
11) Asiakkaan tarpeiden huomioiminen				
12) Tarjooman kohdistaminen ja räätälöinti asiakkaille				
13) Johdon a) sitoutuneisuus				
b) kyvykkyys				

14) Kustannustehokkuus e-liiketoiminnassa				
15) Vahvuus toimialan kilpailussa				
16) Asiakkaiden tyytyväisyys ja uskollisuus				
17) E-liiketoiminnan kannattavuus				
18) E-liiketoiminnan liikevaihto				
19) Asiakkaiden lukumäärä				
20) Tietoturvallisuus a) organisaation sisäisestä näkökulmasta				
b) asiakkaan näkökulmasta				

APPENDIX 4 - Interview guide of Paper III for Scandinavian portal managers

a) Demographic data

Purpose: To establish some basic facts about the portal

Name, age, title, organization, department, vision, owner(s), launch date, turnover, market share, # personnel, #users, organization, vertical, geographical and horizontal scope

b) User relationship

Purpose: To collect information about the portal's relationship with single users

Typical user and usage, transaction history, customization by the portal, loyalty point, self-customization by the user, registration needed and building of relationship with user

c) Community

Purpose: To collect information about the portal's community

Homogeneity of the community, number of communities, subgroups, clans, committees, interaction within the community, community roles, community leadership, community etiquette, community events and rituals

d) Financial issues

Purpose: To collect information about the portal's current and past financial situation

Revenue model, subscription fees, ads, licences, transaction or relationship focused, finance of operations, and financing the operation of the portal

e) Technology

Purpose: To collect information about the portal's use of Internet technologies

Systems (built in-house or software package), types of systems, access technologies, technology choices of users, and cookie policy

f) Competitors

Purpose: To collect information about the competitive situation of the portal

Cooperation, mergers, monopoly market, Competition, new technologies or service innovations, critical points in the history of the portal, new entries (can two identical portals co-exist?), and threats of environment

g) Implementation strategy

Purpose: To gather information about the overall business strategy and business model of the portal

Portal management model (PMM), get big fast (GBF), only as income will allow, and current challenges

h) Future objectives and goals for the portal

Purpose: To gather the interviewee's views and opinions on the objectives and goals for the future of the portal

Geographically, vertical, horizontal, functional, revenues and profitability, technical, and products & services offered

i) Lessons learned

Purpose: What personal lessons does the interviewee think are the most relevant to other portal managers?

PART II: THE ORIGINAL PAPERS

Paper I

Horsti, A. (2006)

"Evaluation Tool for e-Business Models: A Theoretical and Empirical Investigation." Unpublished.

EVALUATION TOOL FOR E-BUSINESS MODELS: A THEORETICAL AND EMPIRICAL INVESTIGATION

Abstract

The usage of the term business model has significantly increased among both researchers and practitioners. Our interest is to study the evaluation of e-business models and the paper presents an evaluation tool for them. The tool is based on critical success factors that are divided into prerequisites and measures of success. The success factors are gathered from two sources: a literature review on management research and an empirical study on five e-business models from different industries. In addition, e-business models are described and illustrated with five case studies. Based on the evaluation, a company can set and follow defined objectives and goals for a business model, compare the competitiveness of a business model to other business models in the market, improve continuously a business model as well as prove the success of a business model.

Keywords: E-commerce, e-business model, critical success factors, life-cycle

Introduction

Every time in history, a new technology has generated new business opportunities through an incremental or radical innovation (Schumpeter, 1934): this holds true also in the Internet-era. E-business has become one of the main topics discussed among researchers and business practitioners. Meanwhile, the concept of e-business model is introduced (Timmers, 1998) to classify and understand Internet-based electronic commerce. According to Timmers (1998), an e-business model consists of the architecture of products, services, and information flows including various business actors and roles. An e-business model describes also potential benefits for each business actor and the sources of revenues. In addition, Weill and Vitale (2001) emphasise the role of IT in discussing e-business models.

Despite the well-structured e-business model definition, still an overall understanding of e-business models is rather inadequate. Pateli and Giaglis (2004) identify the existing gaps in the current e-business model studies recognising only a few academic studies with theoretical views discussing the e-business models. In addition, we see that the empirical investigation of e-business models and their success is limited. Most of the existing studies have focused on describing the definition, taxonomy or components of an e-business model, instead of evaluating success and following their life-cycle (Pateli & Giaglis, 2004; Osterwalder et al., 2005).

In order to fill in this gap, we introduce an e-business model evaluation tool enabling the evaluation of an e-business model. An evaluation tool can be used to identify the focus areas of an e-business model that most contribute to the success of the e-business model and to its competitive position. In addition, evaluation is required especially in following how the defined objectives and goals of a business model are reached, in assessing the success of business models, and in developing new business models and improving the existing ones. Traditionally, the evaluation of a specific activity has been done on the company level but the business model concept focus on the business unit level. Thus, a company can have many different business models as stated by Hedman and Kalling (2003).

We utilise two data sources in constructing an evaluation tool. Our first source is the existing management research, consisting of business model framework, critical success factors (CSF) and life cycle model literature. The second source is the empirical data of five companies' interviews representing the following industries: travelling, media, logistics, telecom, and paper.

This paper seeks to answer the following research questions:

(i) What kind of approaches and methods can be adopted in evaluating an e-business model?

(ii) Which are the most essential PoS (prerequisites of success) factors enabling the success of an e-business model?

(iii) Which are the most essential MoS (measures of success) factors proving the success of an e-business model?

This paper is divided into six sections. The next section reviews the most relevant literature related to the topic of the study. The third section presents the research strategy and data collection methods. The fourth section introduces an e-business evaluation tool and illustrates the usage of tool. The fifth section analyses the constructs of the e-business models of the five case companies. Finally, the results and conclusions of the research are drawn to sum up the paper.

Literature review

In the section, key theories and concepts affecting the topic of research are described. Firstly, a basis for the e-business model concept is created by strategic management literature. Secondly, the e-business model concept is reviewed. Thirdly, the evaluation of success is presented. Finally, the section is concluded by reviewing the concept of evolution. Figure 1 summarises the theories and concepts reviewed in the section ending to an evaluation tool for e-business models.

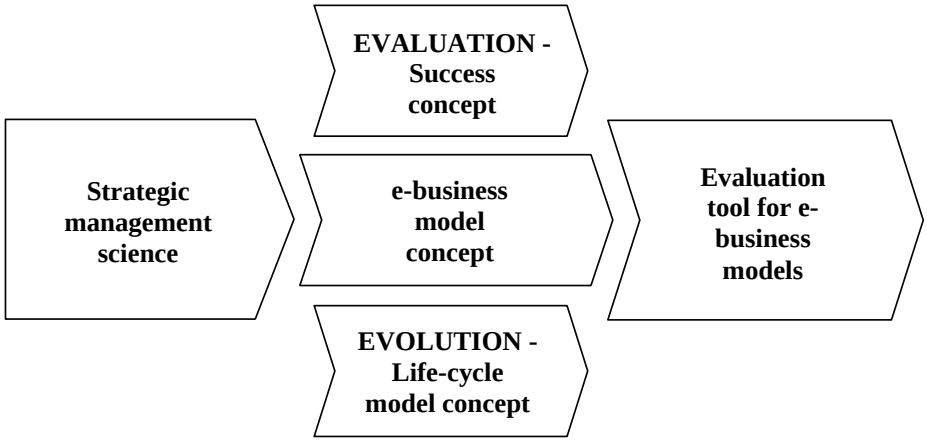


Figure 1. The flow of theories and concepts.

Strategic management science as a basis for the e-business model concept

In creating an understanding of the e-business model concept, roots from the field of strategic management science as a part of the discussion are obvious. At this stage, we face numerous schools of thought, approaches, and techniques (Mintzberg et al., 1998). However, strategy concepts link to the e-business model rationale, and we can identify two overlapping categories: norm concepts and logic concepts.

The norm concepts – for instance, strategy, mission, policy, budget, and corporate planning – evolved in the 1960s and the 1970s. They became quickly widely used and popular (Ansoff, 1965; Anthony, 1965; Steiner, 1969; Andrews, 1971). Norm concepts seek to prescribe what firms should do, what is accepted, important, and relevant. They are all planning concepts aiming at providing a systematic approach to express where the firm will be in the future and what it should do in order to achieve the set goals, thus, the concepts are normative. We can conclude that in linking the norm and e-business model concepts, the norm concepts are needed to determine the purpose and direction of an e-business model.

The logic concepts form another category, which again contains concepts such as the business idea (Normann 1975, 1977), industry recipe (Grinyer & Spender, 1979),

business definition (Abell, 1980), logic of action (Karpik, 1981), value chain and activity system (Porter, 1985, 1996), dominant logic (Prahalad & Bettis, 1986), company paradigm (Johnson & Scholes, 1988), and industrial wisdom (Hellgren & Melin, 1993). These concepts share the notion that strategy requires some common thread of thought as the basis for the logic of action. Interestingly, Evans and Wurster (1997) have a different view on the traditional structure of an industry arguing that due to IT the disintermediation of a traditional value chain is enabled, since technologies have changed the way how organizations are doing the business. However, we can sum up that these concepts help to operationalise an e-business model and bring the defined strategies related to an e-business model into practice.

In reviewing the strategic management literature (Bharadwaj, 2000; Barney, 2001), one of the most dominant phenomenon and an enabling base for the e-business model concept is the theory of resource-based view (Barney, 1991). According to the theory, the resources and the performance of a company are linked in a way that the resources and skills are firm-specific, rare, and difficult to imitate or substitute (Barney, 1991). According to Grant (1991), Bharadwaj (2000), and Barney (2001) the term “resource” includes a wide range of topics such as finance, brand, patents, technological resources, physical assets, capabilities, processes, routines, knowledge, management skills, and other human resources. A company and its e-business models are utilising the allocated resources within an industrial organisation (Bain, 1964) defining, for example, the attractiveness and structure of the industry and the condition of competition among the rivals. Thus, the e-business model has to state and describe its position and role within the industrial organisation and strategic network (Jarillo, 1995) by defining the boundaries of the company (Thompson, 1967) among other players creating each an added value (Porter, 1985) through the offering for the entire industry. Also, the theory of transaction cost economics (Williamson, 1975) offers an essential view to the discussion by determining transactions. Transactions affect the boundaries and the role in the industrial organisation where they form the links between essential actors transferring goods, services, money, and information between them.

We can conclude that the theories discussed in the part of strategic management create a foundation for the e-business model concept. In addition, we regard these theories and concepts as crucial in defining the constructs of an e-business model.

E-business model concept

The e-business model concept has two underlying constructs: e-business and business model. Firstly, e-business refers to the business models built around networking technologies (Kalakota et al., 1999). Turban et al. (2002) continue by stating more specifically that e-business is not just buying and selling of goods and services, but also serving customers, collaborating with business partners, and conducting electronic transactions within an organisation. Weill and Vitale (2001) have also a broad view of the e-business defining that it is the conduct of business and business processes over computer networks based on non-proprietary standards. Secondly, several researchers from different disciplines have defined and discussed the concept of business model. However, one characteristic common to all of these definitions: they emphasise the value creation and competitiveness through activities or structures described by a business model (Timmers, 1998; Mahadevan, 2000; Rappa, 2000, 2004; Afuah & Tucci, 2001; Amit & Zott, 2001; Weill & Vitale, 2001; Osterwalder & Pigneur, 2002; Hedman & Kalling, 2003; Morris et al., 2005). Finally, we can sum up that e-business combines all participants of any business model, within any industry, in its business environment and value chain, with an electronic networking technology, such as the Internet.

Weill and Vitale (2001) define the e-business model concept: "... is a description of the roles and relationships among a firm's consumers, customers, allies, and suppliers that identifies the major flows of product, information, and money, and the major benefits to participants." Compared to the traditional business models, e-business models are based on the business logic in which IT-infrastructure has a relevant role (Weill & Vitale, 2001). Obviously, existing IT-infrastructure in one of the key aspects in evaluating e-business models meaning different CSFs compared to the evaluation of traditional

business models. However, we adopt these definitions in reviewing and analysing the e-business models of the case companies.

Pateli and Giaglis (2003, 2004) review the e-business model literature and they construct a research framework for the field of the e-business models. Their framework consists of eight sub-domains: definitions, components, taxonomies, conceptual models, design methods and tools, adoption factors, evaluation models, and change methodologies (Pateli & Giaglis, 2004). Thus, Pateli and Giaglis (2004) raise the need for the evaluation of e-business models, since the evaluation model sub-domain is among the less matured areas in e-business model research. Moreover, their results from the e-business model literature review demonstrate the need for further research towards assessing e-business models from different perspectives. So far, some studies (Hamel, 2000; Afuah & Tucci, 2001; Weill & Vitale, 2001; Osterwalder & Pigneur, 2002; Morris et al., 2005) discuss the evaluation of e-business models, but still results consisting of concrete methods and tools are scarce.

Before evaluating any e-business model, we should be conscious of the constructs of an e-business model. According to Pateli and Giaglis (2003), the basis for an evaluation can be derived from the e-business model components. Hedman and Kalling (2003) present a generic e-business model framework including seven e-business model components: (1) customers; (2) competition; (3) offering; (4) activities and organisation; (5) resources; (6) suppliers; and (7) scope of management. In this research, we have adopted this categorisation of e-business model components as a basis for an e-business model evaluation tool.

To sum up, most of the e-business model literature is focused on the constructs and static viewpoints instead of describing the dynamic nature and evolution of an e-business model. In this research, we have adopted an evaluative view in studying e-business models.

Critical success factors

We consider concepts related to the success concept as an essential part in evaluating the e-business models. In this way, we are able to recognise the most essential variables that should be continuously followed and developed in gaining most of the success of an e-business model.

One of the most used concepts is the CSF developed by Daniel (1961) and refined by Rockart (1979). CSFs are the limited number of focus areas that most contribute to the success of the company and to its competitive position. Therefore, according to Rockart (1979), it is crucial for companies to pay attention to these factors and manage them well. Furthermore, the current status of the performance of each CSFs should be continually measured, and that information should be made available (Rockart, 1979). CSFs yield a top-down analysis that focuses on a core set of essential issues (Boynton & Zmud, 1984), a few key areas where things must go right (Rockart, 1979). The essential part of the CSFs is interviews among individual managers focusing on each manager's information needs including both hard and soft (Rockart, 1979). On the other hand, CSFs have been criticised for being too difficult to use, the validity of the method has been questioned, and the complexity of the method may finally lead into an overly simplified business environment (Boynton & Zmud, 1984).

However, despite its shortcomings, CSFs can be seen as a common method in the IS research (Akkermans & van Helden, 2002; Boynton & Zmud, 1984; Shank et al., 1985; Teo & Ang, 1999, 2000). Many of the success studies focus on particular IT systems implementations (Cavaye & Cragg, 1995), while others, for example Larsen and Myers (1999), investigate a single business process re-engineering (BPR) project. The main result of Larsen and Myers (1999) study is that success must be seen as a moving target, meaning basically that success can vary considerably depending on the time at which the evaluation is carried out and, furthermore, upon whom you talk to (Larsen & Myers, 1999). This interesting result strongly supports the need for an understanding of the role of life-cycle in evaluating e-business models.

DeLone and McLean (1992) present an IS success model based on a wide literature review. After ten years, they update the original IS success model taking into account the e-business related success measures (DeLone & McLean, 2003). In the updated IS success model, they present six success dimensions: Information quality, Systems quality, Service quality, Intention to use, User satisfaction, and Net benefits. In our study, we regard the first five success dimensions as the prerequisites of success (PoS) and the Net benefits as the measure of success (MoS). DeLone and McLean (2003) define that Net benefits include cost savings, expanded markets, sales growth, reduced searching costs, and time saving as the most relevant measures.

Teo and Ang (1999, 2001) use CSFs in examining the alignment of IS plans and business plans. In these studies, the commitment of top management to the strategic use of IT turned out to be the most relevant CSF. Results remind the importance of traditional leadership related issues also in the e-business context.

Torkzadeh and Dhillon (2002) study the measures of Internet commerce success following the proposition of Keeney (1999). They use a value-based approach in which 199 Internet commerce customers are individually asked questions concerning the values of Internet commerce and shopping. The 125-item list of measures influencing Internet commerce success was also used in our study as a starting point in gathering the CSFs for the study. In addition, Chang et al. (2004) perform a research following exactly the same methods and tools. As a result, they confirm the validity of the original measurement models and improve the instrument by reducing the number of factors. Thus, the contribution of both studies was a list of success measures that can be used in similar value-based research settings.

CSFs have also been a foundation for other concepts studying success factors. Peffers, Gengler and Tuunanen (2003) developed further the CSF concept by coining the term critical success chain (CSC). CSC follows the basics of a three-element model of personal constructs theory (Kelly, 1955) including IS attributes, CSF performance, and firm objectives. According to the CSC, if the firm has an aim to enhance a system with certain attributes, the use of the system will result in outcomes that are observable as

changed CSF performance, which is, in turn, required to achieve relevant firm objectives (Peffers, Gengler and Tuunanen, 2003).

Life-cycle model

E-business models should be evaluated adopting a dynamic approach instead of focusing on the static state of the e-business model. The focus areas of the management are likely to change when the e-business model matures along the life-cycle of the e-business model. Hence, we see that the life-cycle model is an essential part in evaluating e-business models.

The life-cycle model follows phase by phase the normal cycle of life: birth, adolescence, middle age, maturity, and death. In the early 1950s, both business practitioners and researchers of marketing science adopted the concept to manage and study the life-cycle of products. Patton (1959), Levitt (1965), Cox (1967), and Hofer (1975) define the product life-cycle (PLC) concept by describing the evolution of a product, as measured by its sales over time. Patton (1959) continues that the main idea is to create a basis for planning the strategy of profitable product exploitation. According to Levitt (1965) and Cox (1967), different strategies are adopted at the various stages of a PLC. After this, different strategic actions of each life-cycle stage were included (Hofer 1975). Thietart and Vivas (1984) continue by stating that strategies do not only depend on the stage of life-cycle but are also influenced by the goal orientation of the company. In addition, success strategies appear to be contingent upon the business and the environmental characteristics. Within the IS science, the life-cycle model has been used in the context of the computer-based information systems (Necco et al., 1987), systems development (Mantei & Teorey, 1989), and business process re-engineering (Larsen & Myers, 1999).

Methodology

In the section, the study design and data collection methods are presented as a part of factor gathering. Factor gathering can be seen as an initial stage in constructing an

evaluation tool for e-business models. In addition, the selection of case companies is reviewed.

Study design and data collection

We chose a case study strategy (Yin, 1984; Eisenhardt, 1989) as our research method. The advantage of the method is that it enabled us to study e-business models (i.e. phenomenon) within its real-life context in which boundaries between phenomenon and context are not evident (Yin, 1984). In this way, we had a suitable approach to gather CSFs by interviewing the managers as suggested by Rockart (1979) as well as an appropriate way to describe an e-business model for each case.

Any empirical analysis is irrelevant if the data are collected with techniques that have not been proven to provide reliable results and valid data (Nunnally, 1978). Consequently, reliability and validity are regarded as the key concepts of the classical test theory. A reliable measure measures something consistently, while a valid measure measures what it is supposed to measure. In terms of reliability, we followed a case study protocol by documenting all materials and procedures conducted during the research process including the questionnaire form, e-business model descriptions and drawings from each case, and the interview notes. After documenting all the materials, any researcher can repeat the study with similar results. In terms of validity, we reviewed literature relating to the CSFs yielding appropriate items for the evaluation tool. In addition, we used multiple sources of evidence (i.e. 17 interviews among five companies) in order to convergent the lines of inquiries and the CSFs related to an e-business model. Moreover, we used a control group of ten experts representing both academics and practitioners to provide feedback for the study design and questionnaire used in the interviews. In this way, we aimed to consider the quality of research design and the results derived from data.

We selected interviews as a technique to collect empirical data (Yin, 1984). Before the interviews, we structured an interview questionnaire. The 17 interviews among the managers of five Finnish companies were in-depth and person-to-person sessions taking

about two hours. We documented interviews as notes and drawings during each interview. Firstly, we asked the demographics of the respondent and general issues regarding to the company's e-business. Secondly, we discussed the company's e-business model concept, after which we drew the main structure of the e-business model of the company on one sheet of a paper. Finally, we listed the most essential CSFs related to the e-business model. Altogether, we gathered 70 different initial CSFs through the interviews.

Moreover, we continuously reviewed literature and collected CSFs before and after the interviews. The literature review resulted 188 CSFs from 48 references of academics. We recognised that the CSF lists generated through literature review and interviews were complementing each other including also same factors. Hence, we needed to reduce the number of CSFs by removing all the overlapping CSFs. Next, most of the CSFs were linked to literature sources that report empirically sampled and tested CSFs (see Appendices). Finally, we got 57 variables as the basis for e-business model evaluation: 42 PoS (prerequisites of success) and 15 MoS (measures of success).

We decided to use a component listing for categorising the CSFs related to a company's e-business model. We adopted the e-business model framework (Hedman & Kalling, 2003) to divide the large PoS list under each of the seven e-business model components. This also turned out to be a rational and sensible way to present the fairly long list of the CSFs. An overall study design is described in Figure 2.

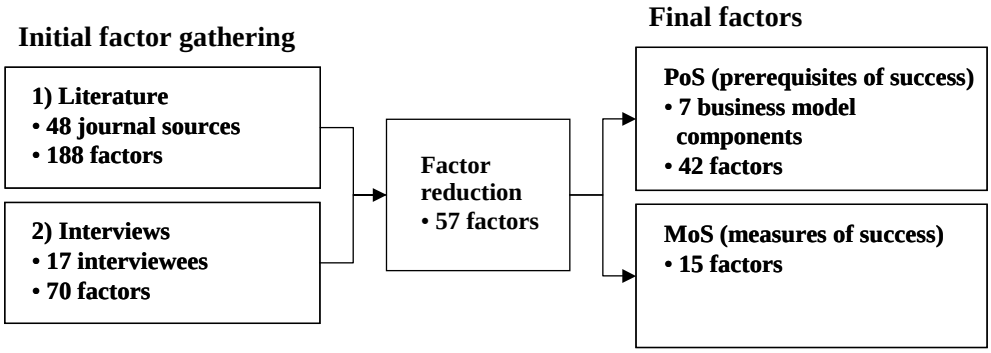


Figure 2. Overall study design.

The selection of case companies

We selected the case companies according to two qualification criteria: 1) the adoption and usage of e-business (i.e. category) and 2) customer type. Firstly, three broad categories of business practice can be recognised when the amount of e-business is roughly estimated: pure Internet-based companies or pure-onliners, clicks-and-mortars, and bricks-and-mortars (Subramani & Walden, 1999; Enders & Jelassi, 2000; Porter, 2001). Pure-onliners emerged during the 1990's, the most famous being Amazon.com and eBay. Clicks-and-mortars are companies, which have supplemented their existing business using the Internet in their operations. Bricks-and-mortars, in turn, are the traditional companies continuing to serve traditional markets without any significant interest for e-business. In other words, these different categories apply to different e-business models. In this study, the selected companies are either clicks-and-mortar or pure-online players. More precisely, we defined a company performing over 50 percent of its turnover through e-business to be a pure-onliner, and company gaining 10-49 percent of its turnover through e-business we classified as a clicks-and-mortar. We excluded traditional bricks-and-mortar companies, since their e-business is typically limited to a modest web presence, such as an informative company homepage without a possibility to purchase goods or services online. Secondly, in terms of customer type, customers are traditionally divided into two groups (Subramani & Walden, 1999): B2C (business-to-consumer) and B2B (business-to-business). The description of interview specification is presented in Table 1.

Table 1. Interview specification.

Case company	**Interview dates**	**Category**	**Customer type**	**Number of interviewees**
Travelling Company	May 2003	Pure-onliner	B2C	2
Media Company	April-May 2003	Pure-onliner	B2B	4
Logistics Company	May 2003	Clicks-and-mortar	B2B	2
Telecom Company	May-June 2003	Clicks-and-mortar	B2C	5
Paper Company	May-June 2003	Clicks-and-mortar	B2B	4

Evaluation tool for e-business models

In the section, an evaluation tool for e-business models is presented. Requirements for an evaluation tool are obvious: both practitioners and academics discussing e-business models need an approach to evaluate e-business models (Osterwalder et al., 2005; Pateli & Giaglis, 2003, 2004). In addition, the usage of e-business models is evidently become common in companies throughout the different industries, the evaluation of e-business models can be seen justified. To conclude, the evaluation enables to set goals and objectives for the e-business models, to focus on and prioritise the most essential business actions and decisions in the management and operative functions, to develop the e-business model as well as to compare the e-business model with a competitor's one.

The structure of evaluation tool

We build the evaluation tool based on the CSFs following the life-cycle: the prerequisites of success are needed in order to gain results and objectives in the end. All the CSFs are gathered from both the literature and interviews. In grouping the PoS factors, we use a categorisation of the e-business model components. Hedman and Kalling (2003) define the following seven business model components: (1) customers; (2) competition; (3) offering; (4) activities and organisation; (5) resources; (6) suppliers; and (7) scope of management. Altogether, the list of PoS factors includes 42 items that are seen relevant in building up success in the early phase of an e-business model's life-cycle. After this, success has a preferable ground for growing along the e-business model's life-cycle and for turning into the MoS factors indicating the achieved results and reached objectives.

The usage of evaluation tool

The evaluation tool provides a compact way to represent and use CSFs in evaluating e-business models. Firstly, each CSF should be prioritised and put in an order according to the importance of each factor, e-business model by e-business model. Currently, the

list on Table 2 is not prioritised. Secondly, the tool should be regularly used to follow up the development of e-business model after a defined period (e.g. once a year). In the same way, the development of each CSFs should be followed and compared to competitor's e-business model. The evaluation tool for e-business models and an illustration of its usage is presented in Table 2.

Table 2. Evaluation tool for e-business models and an illustration of its usage.

——— **Our business model's Current situation**

- - - - - - **Our business model's One-year target**

Competitor A's business model

		STATE OF THE FACTOR						
A) PREREQUISITES OF SUCCESS FACTORS		**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
1) CUSTOMER COMPONENT								
A1	E-business model related customers are recognized							
A2	E-business model related customers have an ability for increased independence e.g. through self-service							
A3	E-business model has an ability to reach a targeted customer segment							
A4	E-business model related customer needs are identified and understood							
A5	E-business model achieves trust among its customers							
A6	Customer service of e-business model is always available (24/7/365)							
A7	Time-saving is enabled for the e-business model related customers							
A8	E-business skills are improved together with the e-business model related customer							
A9	The e-business model related customer data is gathered and utilized							
A10	E-business model related customer service is well-functioning and responses quickly to its customers responses							
A11	E-business model related customers are motified and encouraged to use electronic channels (e.g. Internet)							
A12	IT security is guaranteed for the e-business model related customers							
2) COMPETITION COMPONENT		**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
A13	Decisions regarding the competitive strategy of e-business model are evident being either cost leadership or differentiation strategy							

3) OFFERING COMPONENT		-3	-2	-1	0	+1	+2	+3
A14	E-business model related offering is easily and geographically widely accessible							
A15	The quality of products and services in e-business model is good							
A16	E-business model related offering is priced profitably							
A17	E-business model related processes and offering are easy to use							
A18	E-business model related offering portfolio is well-managed in each life-cycle stage							
A19	E-business model related offering is continuously improved based on customer feedback							
A20	E-business model related offering is targeted and personalized based on customer desires							
A21	E-business model related offering is clear							
A22	The range of e-business model related offering is large							
4) ACTIVITIES AND ORGANISATION COMPONENT		**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
A23	E-business model and its offering has a strong brand							
A24	E-business model related operations are reliable							
A25	E-business model can be regarded as an innovative forerunner in terms of products, services and technology							
A26	E-business model and its offering is constantly developed							
A27	E-business model's operations and processes are cost efficient							
A28	E-business model related operations and activities are managed in terms of right-timing							
A29	E-business model related activities and organization reacts quickly to relevant changes in its business environment							
A30	E-business model related organization's culture and atmosphere are open							
A31	E-business model related organization has readiness to implement new technologies in its e-business							
A32	E-business model related organization has an ability to solve e-business related problems efficiently							
5) RESOURCES COMPONENT		**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
A33	E-business model related personnel is highly experienced and possesses good capabilities and skills							
A34	E-business model related personnel is highly motivated and committed							
A35	E-business model related software and hardware are stabile							
6) SUPPLIERS COMPONENT		**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
A36	E-business model related management accomplishes well networking and partnering relations							

A37	E-business model related operations achieves trust among its business partners							
7) SCOPE OF MANAGEMENT COMPONENT		**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
A38	E-business model related management handles the multi-channel environment including both the traditional and electronic channels							
A39	E-business model related management is committed to e-business development							
A40	Systematic risk management minimizing the vulnerability of e-business model is regarded relevant							
A41	E-business model related management has the ability to identify new e-business opportunities							
A42	E-business related management acknowledges both cultural and generational differences when developing its e-business							
B) MEASURES OF SUCCESS FACTORS		**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
B1	E-business model related customers are satisfied							
B2	E-business model related customers are loyal							
B3	E-business model related business has favourable number of customers							
B4	E-business model related benefits are shared with customers							
B5	E-business model related customers' search costs are reduced							
B6	E-business model related partnerships are successful							
B7	E-business model related offering has reached market leadership							
B8	E-business model related business is profitable							
B9	E-business model related business has adequate turnover							
B10	E-business model related business is growing in terms of profits							
B11	E-business model related business is growing in terms of turnover							
B12	E-business model related business achieves strategic goals							
B13	E-business model related business has a good market value							
B14	E-business model related business explicates savings and benefits							
B15	E-business model related business has good return on investment							

Analysis

In the Analysis section, the role of e-business model is discussed based on the interviews. Finally, each of five cases is reviewed and the description of e-business model is given. In addition, the most essential PoS and MoS factors are identified without giving any values between -3 and +3.

The role of e-business model

In the beginning of each interview, we encouraged the interviewees to define the meaning of an e-business model. Most of the interviewees saw the term e-business model as an earning logic, a statement or plan of how to make money profitably. The interviewees also stressed that an e-business model has to be so concrete and simple that it can be drawn on one sheet of a paper. Next, all the interviews resulted iteratively a business model description after which CSFs were added according to interviewees' opinions.

Case 1: Travelling Company

Travelling Company started as a bricks-and-mortar travel agency two decades ago, but is categorised as a pure-onliner, since about 60 percent of its turnover is generated through e-business. The Travelling Company is the biggest Finnish travel agency on the web having a turnover of €17 million in 2002. To prove the perceived success, during the last three years, the Travelling Company has enjoyed annual growth rates of 45-50 percent being at the same time profitable. The Travelling Company is strongly a B2C-oriented company, since about 90 percent of its customers are consumers. Travelling Company's competitive strategy is a differentiation strategy by offering travelling packages on the web. In addition, the brand of Travelling Company is well-known and reliable in Finland.

The main idea of the Travelling Company’s e-business model is to bundle and resell the travelling services such as flights, hotel accommodations, and car rental services. All these services are drawn together through various travelling service producers. After

this, the Travelling Company packages the services in a value-adding way, and resells either one travelling service or, more often a package of them, directly or indirectly to the end customer. Most of the transaction traffic with their customers is handled on the web but still traditional channels, such as the telephone and local office are seen as necessary to support the electronic channels.

As an outcome of interviews, we recognised the most essential success factors for Travelling Company, including both the PoS and MoS factors (see Figure 3 and Table 2). Factors emphasised in the supplier cooperation relate to the development of travelling packages with desirable services. In bundling the services, negotiation power is needed in order to form a cost-efficient and profitable offering. In addition, interviewees mentioned factors related to the software and hardware reliability and successful partnership management. The factors focusing on the e-business model include competition, offering, activities and organisation, resources, and management related factors. Furthermore, the MoS factors related to e-business model are mainly financial such as revenue, profitability and the growth of them.

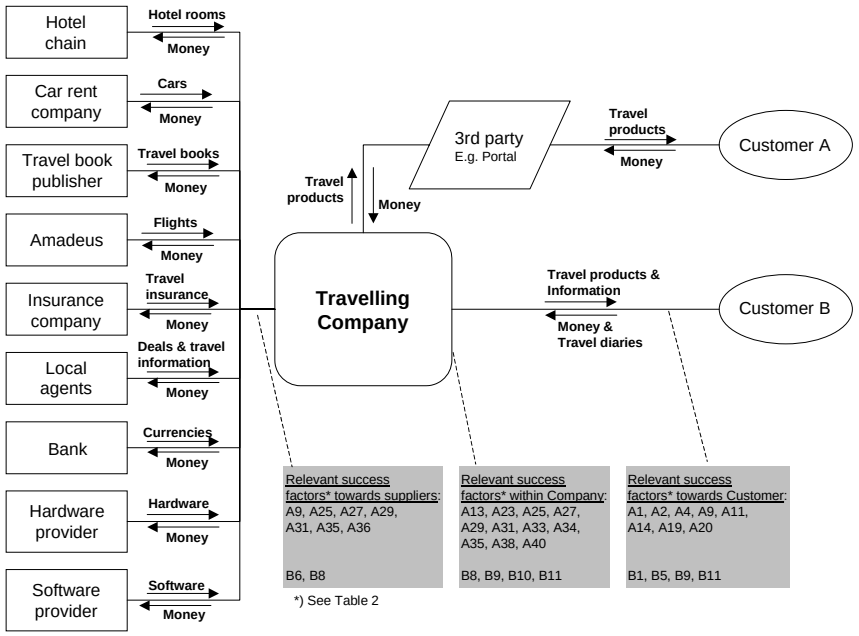


Figure 3. Travelling Company's e-business model and factors.

Case 2: Media Company

The Media Company is classified as a pure-onliner company, even though its business is based on both e-business and printed media. The Media Company's e-business branch made a loss during the first years of operation. Three years ago it was successful in turning the e-business profitable. Its turnover totalled €2.5 million in 2002, and already 50 percent of the turnover comes from electronic channels. The Media Company's customers are primarily B2B-customers, the share of B2C-based income accounts for only 10 percent. Media Company is the leader of the financial media market in Finland having the biggest market share. The utilisation of advanced technologies through electronic channels has made the company more competitive in the market and being "the first mover in the market" has brought both experience and has shown to be an applicable competitive strategy for Media Company.

The Media Company's e-business model includes gathering all business related information services either from external providers delivering data regarding the stock prices and the international business news or from internal data sources (e.g. business manager interviews and reports), repackaging the content, and delivering the content to a customer indirectly or directly via different channels such as Internet portal, newsletters, TV, mobile phone, radio, and newspaper.

The interviews enabled to identify the most relevant PoS and MoS factors for Media Company (see Figure 4 and Table 2). Supplier related factors consist of issues relating to the partnership management especially with the advertisers and technological partners. For instance, the Media Company has experienced an expensive IT development project failure, after which more effort has been allocated to the cooperation and management of software and hardware providers. The Media Company's internal success factors are heavily focused on competition, offering, activities and organisation, and resource related factors. The defined MoS factors related to e-business model include customer satisfaction, loyalty, market leadership, and profitability.

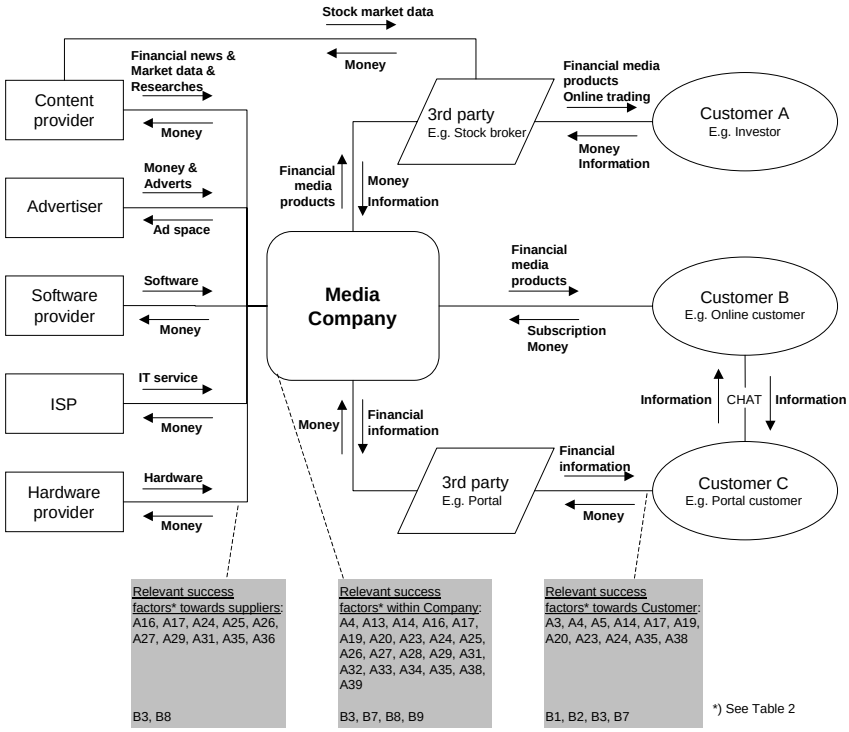


Figure 4. Media Company's e-business model and factors.

Case 3: Logistics Company

The Logistics Company is classified as a clicks-and-mortar company, since about 12 percent of its turnover is generated through e-business. E-business-based turnover was €128 million in 2002. The perceived success of the Logistics Company is provided by the strong annual growth (about 10 %) rates of revenue as well as being the market leader in the logistics and delivery industry in Finland. The competitiveness of the e-business model results from the differentiation of traditional logistics by bringing new innovative tools enabling electronic message and package deliveries. The Logistics Company started its e-business in the early 1990s with EDI-based (Electronic Data Interchange) services, which are still the backbone of its e-business. B2B-customers generate about 80 percent of its turnover.

The purpose of the Logistics Company's e-business model is to deliver a customer's physical products and electronic content geographically from a place A to B. For example, a customer may send billing information to the Logistics Company via an EDI-connection after which the electronic billing data is printed as an invoice and resent by the Logistics Company via a traditional mail to the end-customer.

Logistics Company's PoS factors (see Figure 5 and Table2) aim to serve customers as cost-effectively and straightforwardly as possible. In the MoS factors related to e-business model profitability, customer satisfaction, turnover, and the growth of turnover were listed as the most relevant measures in following the results of the e-business success.

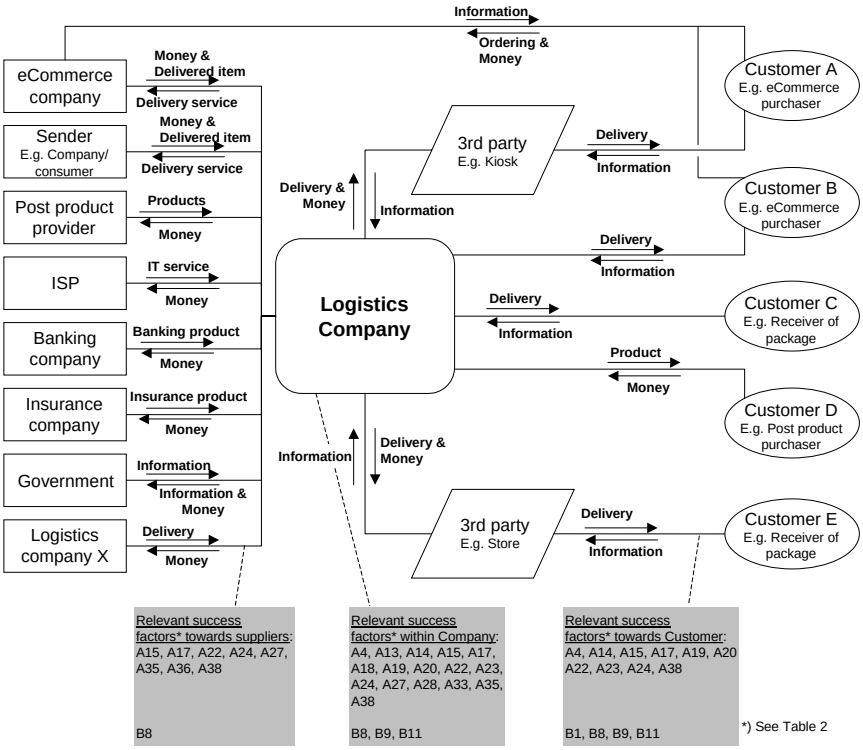


Figure 5. Logistics Company's e-business model and factors.

Case 4: Telecom Company

The Telecom Company is the Finnish part of the largest telecommunication operator in the Scandinavian and Baltic region. The Telecom Company has a market-leader position and a customer base of approximately 2.4 million mobile subscribers in Finland. Despite the size of Telecom Company, they try to differentiate themselves in terms of offering and service e.g. with daily updated content and improved customer service. The Telecom Company is characterised as a clicks-and-mortar company, since most of its revenues are generated through mobile operator business and not directly from its e-business operations.

The Telecom Company uses their e-business model as a basis for the agreements signed with the content providers and many other active business partners involved in their e-business model. The Telecom Company's e-business model describes, for example, how revenues are distributed within the whole value chain. E-business model is also used as an instrument for calculating a rough estimate of the profitability of a mobile service.

The B2C-focused e-business model consisted of value-added mobile services such as ringtones, logos, JAVA-games, and other mobile phone contents and applications. Hence, the requirement for being competitive, the revenue-share deals should be negotiated with the content providers securing the profitability of the e-business model. Moreover, the content offered should be refreshed daily with the newest games and ringtones in order to be competitive. This way, the Telecom Company has a wide leverage of different and localised content in various countries with an optimised risk level. The Telecom Company sells these content products to its customers and through a predefined third-party. In terms of factors (see Figure 6 and Table 2), the B2C-focused e-business model emphasises customer self-service and customer data gathering. In addition, technological innovations are essential in aiming new market opportunities and enabling services having easy-to-use features. The MoS factors related to e-business model are obviously derived from the PoS consisting customer loyalty (i.e. churn in the

mobile operator context), customer satisfaction, profitability, and successful partnerships.

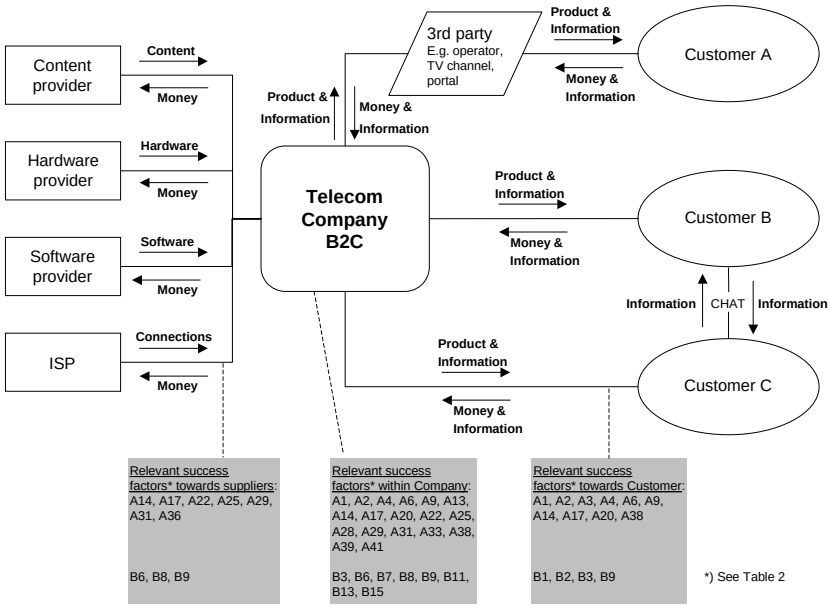


Figure 6. Telecom Company's B2C e-business model and factors.

Case 5: Paper Company

The Paper Company is successful. It is the second largest paper-manufacturing group in the world. The Paper Company's competitiveness is being as a cost-leader in manufacturing especially magazine papers with the biggest capacity in the world. Since 1998, the Paper Company has had a special e-business centre, which works on digitalising manual business processes. E-business is directed to generate cost savings both within the internal and external business processes, thus, an e-business based turnover is difficult to state. The Paper Company's e-business has its roots in the EDI-traffic. The Paper Company's entire customer base is B2B.

The e-business model of the Paper Company is to purchase wood as a raw material from different parts of the world. Next, the raw material is driven through a paper machine by manufacturing the wood into paper rolls that are resold to B2B-customers including

magazine publishers, printing houses or seller agents. In this case, the e-business model is mainly supporting the core business, paper manufacturing.

In the factor listing (see Figure 7 and Table 2), the Paper Company pointed out the customer needs and the readiness to implement e-business services both internally within the organisation and externally between the company and customers. The Paper Company aims at being a forerunner in e-business in paper industry taking into account customer's needs and desires. In the MoS factors, the benefits and cost-savings play a key role in creating customer satisfaction and loyalty with efficient and profitable actions.

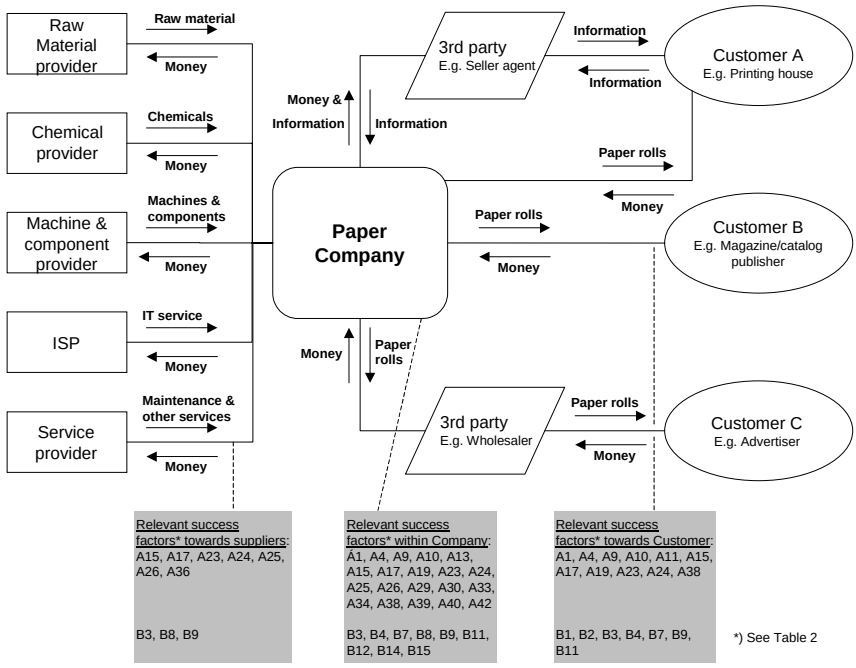


Figure 7. Paper Company's e-business model and factors.

Discussion and conclusion

The final section sums up the paper. Firstly, e-business models and evaluation are discussed. In this part, we present the idea of evaluation tool and its main contributions.

Secondly, most essential PoS and MoS factors are reviewed with the concept of life-cycle model. Finally, limitations and avenues for further research are identified.

E-business models and evaluation of them

Despite the recognised need for studies comprising and focusing on the evaluation of e-business models in IS (Pateli & Giaglis, 2003, 2004; Osterwalder et al., 2005), the number of empirical studies is still scarce. Thus, this paper continues and widens academics' and practitioners' discussion on the theme from the evaluative point of view instead of focusing entirely on the constructs and the lists of e-business models. The evaluation is essential in defining goals and objectives for the e-business model, in comparing the e-business model to the competitor's e-business model, and in improving the e-business model based on the measurement.

This study proposed a way to explore the area of the evaluation of e-business model research as stated in the first research question. Thus, the main contribution of this paper was to introduce a qualitative evaluation tool for e-business models that is based on strategic management, CSFs and life-cycle model studies. The evaluation tool was constructed on the business model framework (Weill & Vitale, 2001; Hedman & Kalling, 2003; Pateli & Giaglis, 2003, 2004) including seven e-business model components (Hedman & Kalling, 2003).

In this study, we constructed an evaluation tool gathering CSFs from two sources: management literature and interviews. All these factors are either prerequisites or measures of success. Prerequisites of success (PoS) factors are issues enabling success. On the contrary, Measures of success (MoS) factors are merely results derived from gained success. Next, we synchronised all the gathered factors in order to reduce the number of them onto a reasonable level. Finally, we identified 57 factors including both PoS and MoS factors (see Appendices). The evaluation tool for e-business models can be used both by researchers and practitioners in measuring the level of success and giving a summarised list of issues that should be acknowledged in a particular e-business model. For the academics, the tool may be useful contributing e-business

model research from the evaluative point of view. The evaluation tool is built based on the previous management science literature offering a large-scale literature basis for the factor-based evaluation and academic discussion. For practitioners, the tool is useful in creating new e-business model ventures: the tool enables making a checklist for a new e-business model that can be easily prioritised. Moreover, the tool is also a recommended way to compare a new e-business model to the existing e-business models in the market. E-business model evaluation has been actively performed by financial companies or other similar companies that have an interest for e-business models before making their decisions concerning financial arrangements and acquisitions.

CSFs and life-cycle

Next, we review most essential PoS and MoS factors and the effects of life-cycle model per each CSF. Hence, the discussion tries to give answers to second and third research questions.

In the e-business model's introduction phase, typical CSFs are almost identical with those of the normal business logic, known long before the e-business era. They include technological innovation as well as experienced and skilled personnel, which are essential factors in starting up a business based on a planned, appropriate business plan and business model.

In the growth phase, the customer-related CSFs such as a strong customer view and brand are key focus areas within the e-business models of the case companies. On the other hand, CSFs behind the customer orientation are reliability and operational trustworthiness of IT-infrastructure equal to the quality of the company’s offering and brand image. In addition, managerial capabilities and mastering of multi-channel environment are seen essential. However, true customer-centricity is still more an objective in all e-business models. The main reason for this is that electronic channels are regarded as supportive channels beside the traditional ones, such as the point-of-sale.

When moving towards the maturity phase of an e-business model, the case companies had remarkable difficulties to explicitly define any prevailing CSFs. In the maturity phase, CSFs touch the areas of cost-efficiency, timing, customer independency (i.e. self-service), and wide-product portfolios. In this phase, fundamental business rules prevail and the business has to be cost-efficient and financially reasonable. Moreover, especially profitability and turnover are emphasised after the period of innovation and growth. Also customer loyalty is seen important.

Limitations and possibilities for further research

Like most empirical studies, this research is subject to limitations. Firstly, the sample consists only of Finnish companies operating within various industries and both in local and international markets. Hence, a larger sample with cross-cultural data would give a richer picture of the subject matter. In addition, the contextual matters affecting the e-business model should be integrated more profoundly to the study including cultural, societal, and legal factors. This could also lead to more generalisable results. Secondly, the study lacks a quantitative instrument validation of the e-business evaluation tool that might strengthen its reliability and validity. A reliable measure measures something consistently, while a valid measure measures what it is supposed to measure. The e-business evaluation tool receives support only from content validity due to a careful literature review yielding appropriate success factors for the instrument. Furthermore, the interviews among five companies completed the list of variables related to the e-business model success. Hence, these two different sources of success factors enable an adequate level of content validity.

Further research in the area of e-business models is clearly needed, since the amount of academic research is inadequate. Especially the evaluative perspective is not stressed enough compared to the basic listings, taxonomies, and categorisations of the business models. In addition, the e-business model evaluation tool presented in this paper requires an empirical testing with a large case setting using either qualitative or quantitative research methodologies.

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APPENDICES

Appendix 1 - Prerequisites of success (PoS) factors (not prioritised)

	Factors from interviews	Factors from literature	Literature source
	1) Customer component		
1	Company knows its e-business customers	Identify issues and event that customer use as triggers to access the company	Weill&Vitale (2001)
2	E-business enables an increased customer independence (e.g. self-service)	PC based customer support alone	Torkzadeh&Dhillon (2002)
3	E-business has ability to reach right customer segment	Find and retain customers who share a common interest	Weill&Vitale (2001)
4	Company identifies and understands customer needs in its e-business	Responsiveness to user needs Capture data on customer needs	Teo&Ang (1999) Weill&Vitale (2001)
5	Company achieves trust of its e-business customers	Trust Trusted brand	Jarillo (1995); Torkzadeh&Dhillon (2002) Weill&Vitale (2001)
6	Customer service of e-business is always available (7/24/365)	Availability	DeLone&McLean (2003)
7	E-business enables time-saving for its customers	Time savings	DeLone&McLean (2003)
8	Company improves its e-business skills together with the customer	Give new ideas to customer	Torkzadeh&Dhillon (2002)
9	Company collects and uses customer data in its e-business	Own more of the customer data in the domain than any other player Leverage member profile data with service providers	Weill&Vitale (2001) Weill&Vitale (2001)
10	Company's customer service in e-business is well-functioning and responses quickly to a customer's responses	Availability of customer service Response time Increase level of completeness over time	Torkzadeh&Dhillon (2002) Saarinen (1996); DeLone&McLean (2003) Weill&Vitale (2001)
11	Company motifies/encourages its customers to use e-business	Maximise good shopping experience Richness of experience	Keeney (1999); Torkzadeh&Dhillon (2002) Weill&Vitale (2001)
12	Company guarantees security for its e-business customers	Security Adequate security Easy and secure payments Privacy and security of member data	Keeney (1999); Torkzadeh&Dhillon (2002); DeLone&McLean (2003) Weill&Vitale (2001) Weill&Vitale (2001) Weill&Vitale (2001)
	2) Competition component		
13	Company makes decision concerning the competitive strategy of e-business model being either cost leadership or differentiation strategy	Competitive advantage Competitive opportunity	Porter (1985&2001) McFarlan (1984)
	3) Offering component		
14	E-business products and services are well-accessible and the geographic spread of offering is wide	Extent of use Availability Accessibility Maximised access	Saarinen (1996) DeLone&McLean (2003) Torkzadeh&Dhillon (2002) Keeney (1999)
15	The quality of e-business products and services is good	Quality Product quality High quality of IT systems	Doyle (1992); Saarinen (1996); DeLone&McLean (2003) Venkatraman&Ramanujam (1986); Jenster (1987); Keeney (1999); Torkzadeh&Dhillon (2002) Kwon&Zmud (1987)
16	Company prices its e-business at a profit	Price/performance Transfer pricing management	Saarinen (1996) Weill&Vitale (2001)
17	Company's e-business processes and products are easy to use	Ease-of-use User friendliness Clarity Usability Fast and efficient service Ease-of-use	Saarinen (1996); Keeney (1999); Torkzadeh&Dhillon (2002) Saarinen (1996) Saarinen (1996) DeLone&McLean (2003) Weill&Vitale (2001) Weill&Vitale (2001)
18	Company manages well its e-business product portfolio in each life-cycle stage	Development phases	Saarinen (1996)
19	Company improves its e-business offering based on customer feedback	Capture data on customer needs	Weill&Vitale (2001)
20	Company has a targeted e-business offering based on customer desires	Personalisation	DeLone&McLean (2003)
21	Company has a clear customer offering in e-business	Good product offering	Torkzadeh&Dhillon (2002)
22	Company has a large range of e-business products	Large range of product options	Keeney (1999); Torkzadeh&Dhillon (2002)
	4) Activities and organisation component		
23	Company's e-business has a strong brand	Managing brand and channel conflicts Trusted brand recognised at all places in the	Weill&Vitale (2001) Weill&Vitale (2001)

		value chain	
24	E-business operations are reliable	Reliability	Saarinen (1996); DeLone&McLean (2003)
25	Company's e-business is a forerunner in terms of products, services and technology	Able to keep advances in IT Generation of new ideas Innovation	Teo&Ang (1999) Shank, Niblock&Sandalls (1973); Venkatraman&Ramanujam (1987b) Schumpeter (1934); Taylor (1975); Jenster (1987); Venkatraman&Ramanujam (1987b)
26	Company develops its e-business and products constantly	Development process	Saarinen (1996)
27	Company's e-business is cost-efficient	Efficiency Cost savings Technological efficiency Marketing effectiveness Productivity MIS effectiveness Cost effectiveness of IS Organisational effectiveness Cost reductions	Saarinen (1996) Keeney (1999); Torkzadeh&Dhillon (2002); DeLone&McLean (2003) Venkatraman&Ramanujam (1986) Venkatraman&Ramanujam (1986) Hitt&Brynjolfsson (1996) Cooper&Quinn (1993) Miller&Doyle (1987) Millman&Hartwick (1987) Rivard&Huff (1984)
28	Company manages right-timing in its e-business	Timeliness Up-to-dateness Accuracy and timely products Provide reliable, timely content in the right format and at the right place	Saarinen (1996) Saarinen (1996) Torkzadeh&Dhillon (2002) Weill&Vitale (2001)
29	Company reacts quickly to relevant changes in its e-business environment	Environmental concerns Turbulence of environment Flexibility to adapt changes Minimise environmental impact Scale up infrastructure quickly Strategic flexibility	Doyle (1992) Weill (1992) Venkatraman&Ramanujam (1987b) Keeney (1999); Torkzadeh&Dhillon (2002) Weill&Vitale (2001) Hamel (2000)
30	Company's culture and atmosphere are open	Free communication	Ang&Teo (1997)
31	Company has readiness to implement new technologies in its e-business	Superior IT capability	Bharadwaj (2000)
32	Company has an ability to solve e-business related problems	Identify key problem areas	Venkatraman&Ramanujam (1987b)
	5) Resources component		
33	Personnel is highly experienced and possesses good capabilities and skills	IS knowledge Business knowledge Qualified personnel Experience of IT Know-how Core competence	Saarinen (1996) Saarinen (1996) Ang&Teo (1997) Weill (1992) Teece (1998) Prahalad&Hamel (1990); Hamel (2000)
34	Personnel is highly motivated and committed	Commitment Management commitment Motivated personnel Management support Motivation of management	Saarinen (1996); Ang&Teo (1997) Kwon&Zmud (1987); Weill (1992); Saarinen (1996); Teo&Ang (1999) Doyle (1992) Ang&Teo (1997); Teo&Ang (2001) Hall (1977); Venkatraman&Ramanujam (1987b)
35	E-business related software and hardware are stabile	Performance IT-infrastructure instability	Saarinen (1996) Han&Noh (2000)
	6) Suppliers component		
36	Company manages well its e-business networking and partnering	Internal partnership between units Share benefits equitably with partner Achieves critical mass Compile and deliver accurate and timely statements of services and benefits provided	Teo&Ang (1999) Weill&Vitale (2001) Weill&Vitale (2001) Weill&Vitale (2001)
37	Company achieves trust among its business partners	Trust	Jarillo (1995); Torkzadeh&Dhillon (2002)
	7) Scope of management component		
38	Company manages the multi-channel environment including both the traditional and electronic channels	Enabled access via various channels Managing brand and channel conflicts Balance availability of multiple channels with cost of supporting them	Torkzadeh&Dhillon (2002) Weill&Vitale (2001) Weill&Vitale (2001)
39	Company's management is committed to e-business development	Management commitment Skills of management	Teo&Ang (2001) Teo&Ang (1999)
40	Company has a systematic risk management to minimise its vulnerability in e-business	Minimised risk Anticipation of surprises and crisis Avoiding problem areas	Doyle (1992) Ansoff (1984); Venkatraman&Ramanujam (1987b) Shrivatsava&Grant (1985)

41	Company has the ability to identify new e-business market opportunities	Identify new business opportunities Predicting future trends	Venkatraman&Ramanujam (1987b) Paul, Donavan&Taylor (1978)
42	Company acknowledges both cultural and generational differences when developing its e-business	Corporate culture	Barney (1991)

Appendix 2 - Measures of success (MoS) factors (not prioritised)

	Factors from interviews	Factors from literature	Literature source
1	Customers are satisfied	User satisfaction Good user-IS relationship User satisfaction Consumer surplus Customer satisfaction	DeLone&McLean (2003) Ang&Teo (1997) Weill (1992) Hitt&Brynjolfsson (1996) Keeney (1999); Osterwalder&Pigneur (2002); Torkzadeh&Dhillon (2002)
2	Customers are loyal	Loyalty Lock-in	Osterwalder&Pigneur (2002) Shapiro&Varian (1999)
3	E-business model related business has favourable number of customers	Number of site visits Number of visitors Dominance in the market Customer awareness Own the customer relationship Critical mass of users	DeLone&McLean (2003) Eisenmann&Pothen (2000) Damsgaard et al. (2004) Weill&Vitale (2001) Weill&Vitale (2001) Weill&Vitale (2001)
4	Benefits are shared with customers	Enhanced customer productivity Present the information to customers in clear and innovative ways that provide value	Torkzadeh&Dhillon (2002) Weill&Vitale (2001)
5	Customers' search costs are reduced	Searching costs	DeLone&McLean (2003)
6	Successful partnerships	Establish a network of allies through which content is disseminated	Weill&Vitale (2001)
7	Products and services have reached market leadership	Market share Leader in the domain	Kaspar&Cerveny (1985); Venkatraman&Ramanujam (1986); Doyle (1992); Afuah&Tucci (2001) Weill&Vitale (2001)
8	Business is profitable	Economic value Profitability Profit contribution	Porter (2001) Benbasat&Dexter (1985); Benbasat&Dexter (1986); Venkatraman&Ramanujam (1986); Venkatraman&Ramanujam (1987a); Doyle (1992); Hitt&Brynjolfsson (1996); Saarinen (1996); Hoch et al (1999); Afuah&Tucci (2001) Rivard&Huff (1984)
9	Business has adequate turnover	Turnover Revenue	Afuah&Tucci (2001) Porter (1985)
10	Business is growing in terms of profits	Business growth Profit growth	Doyle (1992) Venkatraman&Ramanujam (1987a)
11	Business is growing in terms of turnover	Incremental additional sales Sales growth Business growth Revenue growth Increased repeat purchase rate Increased size of transaction	DeLone&McLean (2003) Cron&Sobol (1983); Venkatraman&Ramanujam (1986); Venkatraman&Ramanujam (1987a) Doyle (1992) Hoch et al (1999) Weill&Vitale (2001) Weill&Vitale (2001)
12	Business achieves strategic goals	A set of organisational goals	Teo&Ang (1999)
13	Company has a good market value	Market value	Kaspar&Cerveny (1985); Venkatraman&Ramanujam (1986)
14	Business explicates savings and benefits	Cost savings Reduced customer acquisition costs Cost reduction	March&Smith (1995); Saarinen (1996); DeLone&McLean (2003) Weill&Vitale (2001) Weill&Vitale (2001)
15	Company's return on investment is good	ROI	Venkatraman&Ramanujam (1986)

Paper II

Horsti, A., Tuunainen, V. K. and Tolonen, J. (2005)

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EVALUATION OF ELECTRONIC BUSINESS MODEL SUCCESS: SURVEY AMONG LEADING FINNISH COMPANIES

Abstract

In this paper, we aim at identifying the most essential critical success factors that affect success of EC business models. Based on an extensive literature review and a panel of experts, we composed a list of success factors that were divided into prerequisites and measures of success. The list was then operationalized into a survey questionnaire that was tested with 111 representatives of leading Finnish companies involved in e-business. Most factors were confirmed to be important, while we also found some differences for respondents either valuing stability or growth in efficiency and market share. We believe that understanding business models and issues related to successfulness of different components of these models is needed before economically viable e-commerce systems can be developed.

Introduction

Despite the overly optimistic forecasts a few years ago, the proliferation of electronic commerce (EC) has not been quite as fast as expected, and neither has been the profitability of EC. Share of e-business still remains rather modest in traditional companies, while many new "dotcoms" have come and gone.

Overall understanding of business models is rather weak. So far, there are only a few academic studies with theoretical views and empirical evidence on e-business models and their success. Most existing studies have focused on describing the constructs or components of a business model, instead of looking at the evaluation of them. To fill in this gap, we will approach the evaluation issue with the critical success factors (CSF) in order to analyze the dynamics of e-business models.

The aim of our research is to identify the most essential CSFs affecting the success of e-business models including both business-to-business (B2B) and business-to-consumer (B2C) e-businesses. Accordingly, the stated research goals are:

i) To examine and analyze the relevant CSFs that are prerequisites of e-business model success.

ii) To examine and analyze the most important measures of success derived from the prerequisites of success.

We believe that understanding business models and issues related to successfulness of different components of these models is needed before economically viable e-commerce systems can be developed.

The paper is organized as follows: in section 2 we review relevant literature on e-business, e-business models, and critical success factors. Section 3 describes the research design of the empirical study and introduces the survey sample. In section 4, we present the analyses of prerequisites and measures of success. Discussion, conclusions and directions for future research are outlined in section 5.

Literature review

In this section, the most relevant literature domains on which this research is based on and derived from are briefly presented. Firstly, an overall e-business context is defined. Second, the fundamentals of e-business models are looked at in more detail in order to roughly categorize the existing e-business model literature. Finally, the success concept around which the CSFs are winded is discussed.

E-business

According to one of the first definitions by Kalakota et al. [1], e-business refers to business models built around networking technologies. Turban et al. [2] continued by stating more specifically that e-business is not just buying and selling of goods and services, but also serving customers, collaborating with business partners, and conducting electronic transactions within an organization. Weill and Vitale [3] also have a broad opinion of the role of e-business: "…the conduct of business and business processes over computer networks based on nonproprietary standards." In other words, e-business links all parties of any business model, within any industry, in its business environment and value chain, with an electronic networking technology, such as the Internet.

E-business models

Several researchers from different disciplines have defined and discussed business models. One characteristic common to all of these definitions is that they emphasize the value creation through activities or structures described by a business model (see e.g. [4]-[10]). In this study, we focus on business models in e-commerce context. Useful definition by Weill and Vitale [3] states: "E-business model is a description of the roles and relationships among a firm's consumers, customers, allies, and suppliers that identifies the major flows of product, information, and money, and the major benefits to participants."

Pateli and Giaglis [11] present a framework for categorizing the sub-domains of the business model research (see Figure 1). The framework is a matrix with two dimensions of the timeliness and the degree of integration. The framework quite clearly describes the maturity of the business model research, which can be divided into constructive and evaluative studies. According to the framework, the low timeliness and low integration sections include constructive issues related to the business model discussion and research such as the business model definition [3], [4], [5], [8], [12], component listings [5], [9], [13], [14], [15], taxonomies [4], [7], [8], [12], [16], and case representations [9].

Seamlessly or after the constructive business model section in the model of Pateli and Giaglis [11], a more matured business model research begins with a high degree of timeliness and integration. The top-right quarter in their matrix focuses on the evaluative issues of business model including evaluation models [3], [9], [15], [17] as well as change methodologies [14].

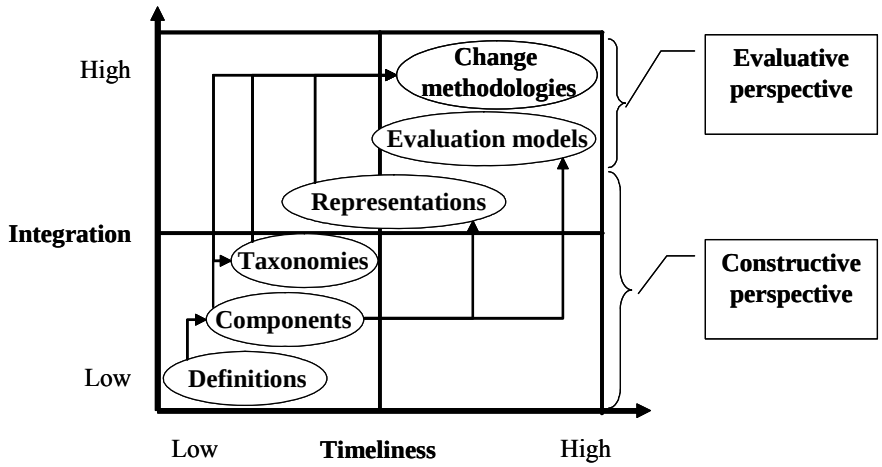

Figure 1. The maturity of e-business model studies (adopted from Pateli and Giaglis, 2003).

There is a remarkable number of business model literature on the constructive and static view-points instead of describing the dynamic nature and evolution of a business model.

Hence, in this study, our purpose is to contribute and bring some empirical research adopting the evaluative point of view in the context of e-business models.

Critical success factors and success concept

Success as a concept has been widely discussed in various disciplines. Strategic management researchers have studied, for example, the business economic performance and the excellence of companies [18], [19], [20], [21] that is based on the fundamental measurements of success. Typically different measures are used to express success. In management literature, one of the most profound concepts is the critical success factors (CSF) introduced by Rockart [22]. CSFs are the focus areas, those few things that must go well contributing to the success of the company and to its competitive position. According to Aaker [23], there are on the average four to six CSFs in an ordinary firm.

The recognized strengths of CSFs are that it is an accepted concept widely used in several studies, and it is a top-down analysis that focuses on a core set of essential issues [24]. On the other hand, CSFs have been criticized for being too difficult to use, the validity of the concept has been questioned, and the complexity of the concept may finally lead to too simplified business environment [24].

However, despite its shortcomings, CSFs can be seen as a common concept in IS research. Many of the success studies are focused on particular IT system implementations [25], while others, for example Larsen and Myers [26], have studied a BPR project. Their main result was that success is a moving target, meaning basically that success can vary considerably depending upon the time at which the evaluation is done and, furthermore, upon whom you talk to [26].

Relatively few studies exist on the CSFs related to e-business models. For the IS success model, DeLone and McLean [27] reviewed and gathered 300 IS articles from high-ranked refereed journals. The synthesized model consists of six interdependent constructs: System quality, Information quality, Use, User satisfaction, Individual impact, and Organizational impact. After ten years, DeLone and McLean [28] presented

an updated IS success model taking into account the e-business related success measures that were not included in their original model. They reviewed more than 100 articles published after 1993 in order to update their previous literature list. In the updated IS success model, they present six success dimensions. They divide quality related issues into the three dimensions: Information quality, System quality, and Service quality. These dimensions are directly related with Intention to use and Use, as well as User satisfaction dimensions, which form a continuous feedback loop with Net benefits dimension. The first five success dimensions can be regarded as the prerequisites of success and the Net benefits as the result of success. The Net benefits include cost savings, expanded markets, sales growth, reduced searching costs, and time savings as the most relevant measures [28].

Teo and Ang [29], [30] used CSFs in examining the alignment of IS plans and business plans. In this study, commitment of the top management to the strategic use of IT turned out to be the most relevant CSF. Results stress the importance of traditional leadership related issues also in the e-business context.

Torkzadeh and Dhillon [31] studied the measures of Internet commerce success following the proposition of Keeney [32]. They used a value-based approach in which values were asked individually from 199 Internet commerce customers. The resulting 125 items list of measures influencing Internet commerce success was also used in our study as a starting point in gathering the CSFs for our survey. Chang et al. [33] examined the developed measurement models by Torkzadeh and Dhillon [31] using a sample of 331 respondents. In addition, they performed the research following exactly same methods and tools as in their earlier study. As a result, they confirmed the validity of the original measurement models and improved the instrument by reducing the number of scales that are comprised as consumer related Internet commerce values.

Empirical findings

In this section, the methodology of the study is discussed. In addition, the demographic data of this survey is presented. The study is based on two sources where the success

factor data is gathered from: one source is factors derived from the first-phase interviews and the other is factors recognized in the earlier success literature. These two separate sources of success factor data are utilized in the quantitative survey conducted among the selected Finnish companies. The significance of the success factors derived from the above mentioned sources in constituting prerequisites of success was studied in the quantitative survey.

Research design

We began the empirical study with qualitative research methods by interviewing 17 employees from five companies in the fall of 2003. These companies represent different industries: paper, media, traveling, telecom and logistics. The main purpose of these interviews was to identify critical success factors affecting the business model of e-business in the companies of the interviewed. These interviews resulted in over 70 initial success factors. At the same time, additional 134 success factors were identified from 35 academic journal articles.

After the interviews, the number of the items on the initial success factor list was reduced by a careful analysis. We combined the two sources of success factors and integrated overlapping success factors. Each item on the list of success factors was linked to the existing success literature that report empirically sampled critical success factors in management and IS disciplines. After the interviews, literature review, and synchronization of the two, we had in total 57 factors that we decided to include as variables in the survey. From these, 42 were considered to be prerequisites of success and 15 measures of success (see Appendices 1 and 2 for full details).

Next, we used a component listing to categorize the success factors that are related to various companies' e-business model. According to a business model framework suggested by Hedman and Kalling [13], we grouped the prerequisites of success factors into categories of 1) customer; 2) competition; 3) offering; 4) action and organization; 5) resources; 6) suppliers, and 7) scope of management.

After the categorization of the list of business model success factors, we designed the initial survey questionnaire. The list of CSFs was presented so that respondents could evaluate the importance of each factor with the scale from 1 (not important) to 7 (extremely important). Common questions related to demographic data of the respondents as well as their companies were included.

The questionnaire was pilot-tested with ten chosen experts representing both practitioners and academics. After final revisions, the questionnaires were sent by mail to the 450 chosen respondents. Figure 2 illustrates the process of gathering the factors for the final CSF list used in the survey.

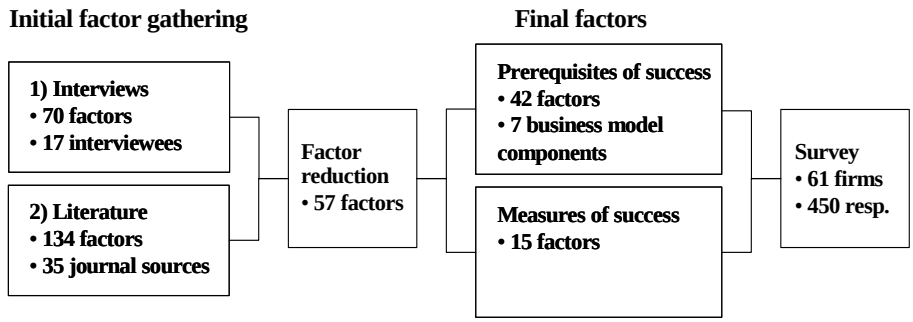

Figure 2. Factor gathering and data collection process.

Sample

The respondents were chosen from Finnish international companies to the sample following the two criteria: 1) the company is among the top 30 Finnish companies according to their revenue and/or 2) the company belongs to the top 100 online brand list in Finland. In this way, we got the list of 61 companies from various industries representing both clicks-and-mortar and pure online ones.

We chose a sample of 450 people, who received the questionnaire by mail. All the respondents are practitioners both from managerial and operational levels of an organization, and they all are working with electronic business issues.

Demographic data

Total number of responses amounted to 111 out of 450 questionnaires, which makes up a 25% response rate. We received properly filled questionnaires from 60 companies. Respondents were mainly male (73%) within the age group of 31-50 years (64%). The respondents, primarily have a university (74%) or polytechnic (12%) degree. They work primarily (46%) on the managerial level of the organization, or as directors (29%). Most of the respondents (73%) have more than 10 years of work experience, 43% of them more than 20 years. 45% of the respondents have five to nine years of valid e-business experience, while 23% have as much as ten years or more of e-business experience. These respondents were typically from those companies that have utilized EDI in their operations since the 1980's.

About half (57%) of the respondents estimated that their company's general profitability has increased notably during the last three years. At the same time, nearly all (95%) of them argue that competition has tightened in their industry remarkably, the mean being as high as 5.65. Two thirds of the respondents say that their companies apply differentiation as their business strategy guideline, whilst the remaining third apply cost leadership strategy.

Most companies in the sample have a long tradition of using EDI in their business operations. In many traditional manufacturing companies, EDI is still seen as a crucial component of e-business. As many as 80% respondents' company had started using EDI before 1993. Also Intranet usage is very common (96%) in the respondents' companies, and more than 50% of those had started the Intranet usage not later than 1994. The use of Extranet solutions has followed the same kind of a development path. Internet is used by 95% of the respondents' companies, and the start of its use has reached its critical mass between 1994 and 1997.

Most of the respondents (80%) state that their companies wish to reach better profitability by directing the suitable customer transactions and relationships to electronic channels, that is, e-business. Profit growth strategy was given as the reason

for e-business by 18% of the respondents, while 17% said they were aiming at increasing transactions and/or turnover without pressure on profit during the next years. 66% respondents represented B2B-oriented companies, while 28% of respondents are mainly focused on B2C-type of business.

We also asked the respondents to evaluate their company's e-business maturity compared to competitors in a particular industry. Approximately two thirds of the respondents see that e-business of their company is at least as mature as that of their competitors. The respondents were also asked to evaluate the profitability of their e-business. A good to excellent value (5-7) was given in 59% of the answers, while 16% gave their company a low value of three or less.

Finally, more than two thirds of the respondents feel confident or very confident about their company's current e-business development and its success as compared with the competition in their industry.

The fact that so many companies have already been using different e-business technologies for few decades, means that e-business is not new thing for traditional companies. As competition is tightening in all industries, IT is more and more seen mainly as an enabler and de facto standard in every company. It seems that even if the profitability of e-business in general has reached a better level after some non-profitable years, it is understood that e-business does not automatically create any competitive advantage.

Analysis

The analysis section is divided into two sub-sections. Firstly, the analysis of the prerequisites of success factors is discussed, after which the focus is shifted on the measures of success. The statistical analyses reported in these two sections were generated through SPSS 11.0 software package.

Prerequisites of success

We started the analysis by listing all the means of each variable. In studying the 42 prerequisites of success factors, we found that all the respondents in average, on a Likert scale from 1 (not important) to 7 (extremely important), value the following issues as the most important to drive the success of e-business: Secured e-business for customers (6.31), Management's commitment for the e-business development (6.25), Easiness to use e-business products and services (6.12), as well as Stability of hardware and software (6.02). On the contrary, Wide e-business product offering (4.60), Life cyclical management of e-business products (4.85), and Customer's know-how enhancement in e-business issues (4.86) were the least relevant compared to the factors above. It is worth of noticing that all the means for prerequisites of success were higher than the median point (3.50).

Some differences were acknowledged between different groups, anyhow. The respondents were grouped based on the company's strategy, client base, and revenue. We used one-way analysis of variance (One-Way-ANOVA) for both the prerequisites and measures of success variables. In each of these groupings, we determined two groups with respect to the chosen criterion. All statistically significant results from these analyses are displayed in Table 1.

Looking at the strategy variable, the respondents were grouped based on the prevailing strategy of their company either into the cost leadership or differentiation group. Respondents in both groups rate the importance of wide product offering quite high, but interestingly, the cost leadership groups values it even higher than the differentiation group.

The companies were also grouped by the type of their clientele into B2B and B2C groups. Even though all the mean values were above media, that is, rated important or very important, we discovered three statistically significant findings related to the prerequisites of success factors. Companies emphasizing the B2C customer base, regard competitiveness even more essential than the B2B-focused companies. Moreover, the

easiness of access to e-business products and services was more relevant among the B2C customer-focused companies than in the B2B-ones. Finally, the wide product offering was more important for the B2C companies compared to those of B2B.

We also grouped the data based on the revenue of the companies: first group for responses from companies whose revenue is less than 1 billion euros and the other for more than 1 billion euros. No statistically significant differences were found in the success factors between the two groups. Regrouping the sample into three groups, small, medium, and large companies, did not produce any significant results, either.

Table 1. ANOVA statistics of prerequisites of success variables.

Factor	Grouping criteria	N	Mean	F	Sig.
Wide product offering	Cost leadership	39	5.10	7.739	0.006
	Differentiation	66	4.27		
Strong in competition	B2B	73	5.32	10.561	0.002
	B2C	31	6.13		
Easy access of products	B2B	73	5.44	6.807	0.010
	B2C	31	6.06		
Wide product offering	B2B	73	4.26	10.940	0.001
	B2C	31	5.26		

Finally, we were interested in the difference that may lie between the business model components. In the questionnaire, the prerequisites of success factors were divided under each seven components as presented in the earlier section. In studying the variance with One-Way ANOVA, we formed one sum variable for each business model component. We utilized this sum variable data and we used it with the grouping data in which respondents were divided in terms of company's strategy, client base, and revenue. Unfortunately, no significant differences were found.

Measures of success

Next, we analyzed the measures of success variables. Firstly, we compared the means as it was done with the prerequisites of success variables in the previous section. Of the 15 measures of success variables, Satisfaction of customers (6.22) was clearly the most emphasized factor by all respondents. Cost savings (5.98) was the second factor, which

may be partly explained by the prevailing profitability-focused era. The third important success factor was Loyalty (5.88) that is related strongly to the customer satisfaction. On the other hand, Shared benefits with customers (4.45) and Revenue (4.52) were seen the least important factors.

After analyzing the means, we moved on to analyze the measures of success variables in more depth with factor analysis. Factor analysis let us decrease and sum up the number of the measures of success variables. We first used Barlett's test of spherity and Kaiser-Meyer-Olkin measure of sampling adequacy. The results indicated that a factor analysis may be useful with the collected data (see the top half of Table 2). The factor analysis resulted in loadings for four factors that generated an appropriate cumulated variance (65.01%) that alone is sufficient for retaining most of the information in the original variables. All the loadings are listed below in the bottom half of Table 2. The variables loading to the first factor (Financial Stability) were Profitability, Revenue, and ROI, all basic financial figures. The second factor (Effectiveness and Economical Values) is most highly correlated with Cost savings, Market value, Searching costs, and Reached strategic objectives, relating to the effectiveness and economical values of a business. For the third factor (Market Growth), the most correlated variables were Number of customers, Shared benefits with customer, Market leadership, and Increased profitability as well as Increased revenue, corresponding to the robustness and growth in the market. In the fourth factor (Customer and Partner relationships), the customer related issues were emphasized with Loyalty, Satisfaction of customers and Success of partnerships as the most loaded variables.

Table 2. Factor analysis of measures of success variables.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.852
Bartlett's Test of Sphericity	Approx. Chi-Square	627.572
	df	105
	Sig.	0.000

Rotated Component Matrix

	Component			
	1	2	3	4
Satisfaction of customers	0.452	0.173	0.021	0.586
Loyalty	0.011	0.125	0.119	0.875
Number of customers	0.234	0.003	0.745	-0.117
Shared benefits with customers	-0.146	0.557	0.563	0.274
Searching costs	-0.007	0.657	0.145	0.150
Success of partnerships	0.344	0.326	-0.047	0.399
Market leadership	0.189	0.091	0.739	0.263
Profitability	0.814	0.109	0.255	0.059
Revenue	0.718	0.171	0.409	0.266
Increased profitability	0.518	0.083	0.676	0.092
Increased revenue	0.484	0.299	0.615	-0.121
Reached strategic objectives	0.287	0.645	0.112	0.201
Market value	0.255	0.743	0.205	-0.084
Cost savings	0.192	0.786	-0.127	0.148
ROI	0.717	0.212	0.243	0.123

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 13 iterations.

We continued the analysis with K-means cluster analysis. As a result from the factor analysis, we derived four new variables according to the component scores generated for each factor. Next, we used K-means cluster analysis to classify all the respondents into two different clusters. In terms of the clustering, the number of cases in each cluster seemed to be divided fairly equally, since Cluster 1 has 56 cases and the other 46.

Table 3. Measures of success variables and factors for the two clusters.

Cluster Number of Case	1 (N=56) Mean	2 (N=46) Mean	Total (N=102) Mean
FACTOR 1: Financial Stability			
Profitability	5.14	5.17	5.16
Revenue	4.73	4.48	4.62
ROI	4.86	5.07	4.95
FACTOR 2: Effectiveness and Economical Values			
Searching costs	5.38	4.78	5.11
Reached strategic objectives	5.96	5.70	5.84
Market value**	5.89	5.17	5.57
Cost savings	6.11	5.93	6.03
FACTOR 3: Market Growth			
Number of customers**	5.98	4.61	5.36
Shared benefits with customers**	5.21	3.65	4.51
Market leadership**	5.55	4.46	5.06
Increased profitability	5.04	4.35	4.73
Increased revenue	5.57	4.80	5.23
FACTOR 4: Customer and partner relationships			
Satisfaction of customers	6.14	6.41	6.26
Loyalty	5.82	5.93	5.87
Success of partnerships	5.07	5.33	5.19

In general, it seems that respondents in cluster 1 strive for increased effectives and market growth, where as the respondents in cluster 2 value financial stability and good relationships with customers and partners. This is emphasized by the most notable (and also statistically significant) differences between the mean values for the result items for the constructs in the Market Growth – factor.

Discussion and conclusion

Business model as a concept has lately been widely discussed among both the practitioners and academics. During the last few years, the level of business model studies in management and IS disciplines has deepened. Still, there are only a few studies relating to the business model evaluation. Hence, we decided to look into evaluation of existing business models in terms of critical success factors in the e-business environment.

Our first objective was to examine and analyze the relevant CSFs that are the prerequisites of an e-business model success. We started the analysis of the survey data by reviewing the means of all the respondents in terms of the prerequisites of success and measures of success. The respondents valuated most of the factors very important, and differences between the importance of the various factors were very difficult to

find. This was, however, predictable to at least some extent, as there were only factors that were expected to be very important in the list, factors that were seen important already in the interviews and earlier studies.

The most important prerequisite of the e-business model success is “secured transactions between the company and its customer”. This is very similar to DeLone and McLean [28], Torkzadeh and Dhillon [31], and Keeney [32], who have found the security related issues relevant. “Management’s commitment to the e-business development” got the second highest mean value. It is noteworthy that traditional leadership issues are still of great importance. This finding is also in line with the study of Teo and Ang [29] in which “top management commitment to the strategic use of IT” was viewed as the number one factor among their respondents. In our study, the third most important factor was “easiness to use the e-business products and services”, which is also discussed both in pre-e-business and e-business context by DeLone and McLean [28], Torkzadeh and Dhillon [31], Keeney [32], and Saarinen [34].

In deepening the analysis of prerequisites of success factors, we used variance analysis to find differences among respondents dividing them into two groups according to company’s strategy, client base, and revenue. In terms of strategy, our results indicate that companies in both groups rate the importance of wide product offering rather high, but interestingly, the cost leadership groups values it higher than the differentiation group. This seems somewhat counterintuitive, but might indicate that in more cost conscious organizations the issues are considered in even greater detail than in the differentiation companies. Importance of wide product offering is, anyhow, supported by Torkzadeh and Dhillon [31] and Keeney [32], who suggest a large range of product option as one measure of success, which should be monitored, in Internet commerce context. In terms of the client base, we discovered some differences between B2B and B2C companies. B2C firms appear to see the wide e-business product offering more important than B2B ones; unfortunately we do not have exact data on the types of products in question in each of these companies, so further analysis of this cannot be conducted. Moreover, the competition force is not seen as relevant among the B2B

companies compared to the B2C companies. In terms of the grouping based on revenue, we did not find any statistically significant differences.

Our second goal was to examine and analyze the most important measures of success variables. “Customer satisfaction” was the most valuated factor, which is in the line with [28], [29], [31], [32], [35], [36], [37], who have discussed the satisfaction of a customer using factors such consumer satisfaction, consumer surplus, user satisfaction, and user-IS relationship. The second most important result of success factor was “cost savings”, which is a factor earlier emphasized by DeLone and McLean [28] and Saarinen [34].

The measures of success variables were grouped under four factors with factor analysis. The four factors generated were titled Financial Stability, Effectiveness and Economical Values, Market Growth, and Customer and Partner Relationships. The factors were used to search for similar cases of respondent. The two clusters generated can be described as those seeking stability and those striving for growth. Finally, variance analysis found slight differences between the two clusters in the variables of “shared benefits with customers”, “number of customers”, and “market leadership”.

All in all, it seems that differences in the area of prerequisites of success were even more difficult to find that in the measures of success area. This seems to indicate that e-business has matured to a level where the fundamental basic requirements are well understood, and the competition over success also in the e-business area is getting increasingly tough.

There are some interesting research areas for future research in business model evaluation. As stated by Larsen and Myers [26], success is a moving target, which may also cause variation in specific CSFs. It would also be interesting to assess each stage of the life cycle of e-business products and services that may give more detailed information on the success.

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Appendix

Appendix 1 – The list of "prerequisites of success".

	Factors from interviews	Factors from literature	Literature source
	1) Customer component		
1	Company knows its e-business customers	Identify issues and event that customer use as triggers to access the company	Weill & Vitale (2001)
2	E-business enables an increased customer independence (e.g. self-service)	PC based customer support alone	Torkzadeh & Dhillon (2002)
3	E-business has ability to reach right customer segment	Find and retain customers who share a common interest	Weill & Vitale (2001)
4	Company identifies and understands customer needs in its e-business	Responsiveness to user needs Capture data on customer needs	Teo & Ang (1999) Weill & Vitale (2001)
5	Company achieves trust of its e-business customers	Trust Trusted brand	Torkzadeh & Dhillon (2002); Jarillo (1995) Weill & Vitale (2001)
6	Customer service of e-business is always available (7/24/365)	Availability	DeLone & McLean (2003)
7	E-business enables time-saving for its customers	Time savings	DeLone & McLean (2003)
8	Company improves its e-business skills together with the customer	Give new ideas to customer	Torkzadeh & Dhillon (2002)
9	Company collects and uses customer data in its e-business	Own more of the customer data in the domain than any other player Leverage member profile data with service providers	Weill & Vitale (2001) Weill & Vitale (2001)
10	Company's customer service in e-business is well-functioning and responses quickly to a customer's responses	Availability of customer service Response time Increase level of completeness over time	Torkzadeh & Dhillon (2002) Saarinen (1996); DeLone & McLean (2003) Weill & Vitale (2001)
11	Company motifies/encourages its customers to use e-business	Maximise good shopping experience Richness of experience	Torkzadeh & Dhillon (2002); Keeney (1999) Weill & Vitale (2001)
12	Company guarantees security for its e-business customers	Security Easy and secure payments Privacy and security of member data	DeLone & McLean (2003); Torkzadeh & Dhillon (2002); Keeney (1999); Weill & Vitale (2001) Weill & Vitale (2001) Weill & Vitale (2001)
	2) Competition component		
13	Company's e-business is strong in competition within its industry	Competitive advantage Competitive opportunity	Porter (1985, 2001) McFarlan (1984)
	3) Offering component		

14	E-business products and services are well-accessible and the geographic spread of offering is wide	Extent of use Availability Accessibility Maximised access	Saarinen (1996) DeLone & McLean (2003) Torkzadeh & Dhillon (2002) Keeney (1999)
15	The quality of e-business products and services is good	Quality High quality of IT systems	Saarinen (1996); DeLone & McLean (2003); Doyle (1992); Venkatraman & Ramanujam (1986); Torkzadeh & Dhillon (2002); Keeney (1999); Jenster (1987) Kwon & Zmud (1987)
16	Company prices its e-business at a profit	Price/performance Transfer pricing management	Saarinen (1996) Weill & Vitale (2001)
17	Company's e-business processes and products are easy to use	Ease-of-use User friendliness Clarity Usability Fast and efficient service Ease-of-use	Saarinen (1996); Torkzadeh & Dhillon (2002); Keeney (1999) Saarinen (1996) Saarinen (1996) DeLone & McLean (2003) Weill & Vitale (2001) Weill & Vitale (2001)
18	Company manages well its e-business product portfolio in each life-cycle stage	Development phases	Saarinen (1996)
19	Company improves its e-business offering based on customer feedback	Capture data on customer needs	Weill & Vitale (2001)
20	Company has a targeted e-business offering based on customer desires	Personalisation	DeLone & McLean (2003)
21	Company has a clear customer offering in e-business	Good product offering	Torkzadeh & Dhillon (2002)
22	Company has a large range of e-business products	Large range of product options	Torkzadeh & Dhillon (2002); Keeney (1999)
	4) Activities and organization component		
23	Company's e-business has a strong brand	Managing brand and channel conflicts Trusted brand recognised at all places in the value chain	Weill & Vitale (2001) Weill & Vitale (2001)
24	E-business operations are reliable	Reliability	Saarinen (1996); DeLone & McLean (2003)
25	Company's e-business is a forerunner in terms of products, services and technology	Able to keep advances in IT Generation of new ideas Innovation	Teo & Ang (1999) Venkatraman & Ramanujam (1987b); Shank, Niblock & Sandalls (1973) Venkatraman & Ramanujam (1987b); Taylor (1975), Jenster (1987); Schumpeter (1934)
26	Company develops its e-business and products constantly	Development process	Saarinen (1996)
27	Company's e-business is cost-efficient	Efficiency Cost savings Technological efficiency Marketing effectiveness Productivity MIS effectiveness Cost effectiveness of IS Organisational effectiveness Cost reductions	Saarinen (1996) DeLone & McLean (2003); Torkzadeh & Dhillon (2002); Keeney (1999) Venkatraman & Ramanujam (1986) Venkatraman & Ramanujam (1986) Hitt & Brynjolfsson (1996) Cooper & Quinn (1993) Miller & Doyle (1987) Millman & Hartwick (1987) Rivard & Huff (1984)
28	Company manages right-timing in its e-business	Timeliness Up-to-dateness Accuracy and timely products Provide reliable, timely content in the right format and at the right place	Saarinen (1996) Saarinen (1996) Torkzadeh & Dhillon (2002) Weill & Vitale (2001)
29	Company reacts quickly to relevant changes in its e-business environment	Environmental concerns Turbulence of environment Flexibility to adapt changes Minimise environmental impact Scale up infrastructure quickly Strategic flexibility	Doyle (1992) Weill (1992) Venkatraman & Ramanujam (1987b) Torkzadeh & Dhillon (2002); Keeney (1999) Weill & Vitale (2001) Hamel (2000)
30	Company's culture and atmosphere are open	Free communication	Ang & Teo (1997)
31	Company has readiness to implement new technologies in its e-business	Superior IT capability	Bharadwaj (2000)
32	Company has an ability to solve e-business related problems	Identify key problem areas	Venkatraman & Ramanujam (1987b)
	5) Resources component		
33	Personnel is highly experienced and possesses good capabilities and skills	IS knowledge Business knowledge Qualified personnel Experience of IT Know-how Core competence	Saarinen (1996) Saarinen (1996) Ang & Teo (1997) Weill (1992) Teece (1998) Hamel (2000); Prahalad & Hamel (1990)

34	Personnel is highly motivated and committed	Commitment	Saarinen (1996); Ang & Teo (1997)
		Management commitment	Saarinen (1996); Teo & Ang (1999); Weill (1992); Kwon & Zmud (1987)
		Motivated personnel	Doyle (1992)
		Management support	Ang & Teo (1997); Teo & Ang (2001)
		Motivation of management	Venkatraman & Ramanujam (1987b); Hall (1977)
35	E-business related software and hardware are stabile	Performance	Saarinen (1996)
		IT-infra instability	Han & Noh (2000)
	6) Suppliers component		
36	Company manages well its e-business networking and partnering	Internal partnership between units	Teo & Ang (1999)
		Share benefits equitably with partner	Weill & Vitale (2001)
		Achieves critical mass	Weill & Vitale (2001)
		Compile and deliver accurate and timely statements of services and benefits provided	Weill & Vitale (2001)
37	Company achieves trust among its business partners	Trust	Torkzadeh & Dhillon (2002); Jarillo (1995)
	7) Scope of management component		
38	Company manages the multi-channel environment including both the traditional and electronic channels	Enabled access via various channels	Torkzadeh & Dhillon (2002)
		Managing brand and channel conflicts	Weill & Vitale (2001)
		Balance availability of multiple channels with cost of supporting them	Weill & Vitale (2001)
39	Company's management is committed to e-business development	Management commitment	Teo & Ang (2001)
		Skills of management	Teo & Ang (1999)
40	Company has a systematic risk management to minimize its vulnerability in e-business	Minimized risk	Doyle (1992)
		Anticipation of surprises and crisis	Ansoff (1984); Venkatraman & Ramanujam (1987b)
		Avoiding problem areas	Shrivatsava & Grant (1985)
41	Company has an ability to identify new e-business market opportunities	Identify new business opportunities	Venkatraman & Ramanujam (1987b)
		Predicting future trends	Venkatraman & Ramanujam (1987b); Paul, Donavan & Taylor (1978)
42	Company acknowledges both cultural and generational differences when developing its e-business	Corporate culture	Barney (1991)

Appendix 2 – The list of "measures of success".

Measures of success factors

	Factors from interviews	Factors from literature	Literature source
1	Customers are satisfied	User satisfaction	DeLone & McLean (2003)
		Good user-IS relationship	Ang & Teo (1997)
		User satisfaction	Weill (1992)
		Consumer surplus	Hitt & Brynjolfsson (1996)
		Consumer satisfaction	Torkzadeh & Dhillon (2002); Keeney (1999)
		Customer satisfaction	Osterwalder & Pigneur (2002)
2	Customers are loyal	Loyalty	Osterwalder & Pigneur (2002)
		Lock-in	Shapiro & Varian (1999)
3	Business has many customers	Number of site visits	DeLone & McLean (2003)
		Number of visitors	Eisenmann & Pothen (2000)
		Dominance in the market	Damsgaard et al. (2003)
		Customer awareness	Weill & Vitale (2001)
		Own the customer relationship	Weill & Vitale (2001)
		Critical mass of users	Weill & Vitale (2001)
4	Benefits are shared with customers	Enhanced customer productivity	Torkzadeh & Dhillon (2002)
		Present the information to customers in clear and innovative ways that provide value	Weill & Vitale (2001)
5	Customers' search costs are reduced	Searching costs	DeLone & McLean (2003)
6	Successful partnerships	Establish a network of allies through which content is disseminated	Weill & Vitale (2001)
7	Products and services have reached market leadership	Market share	Venkatraman & Ramanujam (1986); Doyle (1992); Kaspar & Cerveny (1985); Afuah & Tucci (2001)
		Leader in the domain	Weill & Vitale (2001)
8	Business is profitable	Economic value	Porter (2001)
		Profitability	Afuah & Tucci (2001); Saarinen (1996); Hoch et al (1999); Venkatraman & Ramanujam (1986); Venkatraman & Ramanujam (1987a); Doyle (1992); Hitt & Brynjolfsson (1996); Benbasat & Dexter (1985); Benbasat & Dexter (1986)
		Profit contribution	Rivard & Huff (1984)
9	Business has adequate turnover	Turnover	Afuah & Tucci (2001)
		Revenue	Porter (1985)
10	Business is growing in terms of profits	Business growth	Doyle (1992)
		Profit growth	Venkatraman & Ramanujam (1987a)
11	Business is growing in terms of turnover	Incremental additional sales	DeLone & McLean (2003)
		Sales growth	Venkatraman & Ramanujam (1986); Venkatraman & Ramanujam (1987a); Cron & Sobol (1983)
		Business growth	Doyle (1992)
		Revenue growth	Hoch et al (1999)
		Increased repeat purchase rate	Weill & Vitale (2001)
		Increased size of transaction	Weill & Vitale (2001)
12	Business achieves strategic goals	A set of organizational goals	Teo & Ang (1999)
13	Company has a good market value	Market value	Venkatraman & Ramanujam (1986); Kaspar & Cerveny (1985)
14	Business explicates savings and benefits	Cost savings	Saarinen (1996); DeLone & McLean (2003); March & Smith (1995)
		Reduced customer acquisition costs	Weill & Vitale (2001)
		Cost reduction	Weill & Vitale (2001)
15	Company's return on investment is good	ROI	Venkatraman & Ramanujam (1986)

Paper III

Damsgaard, J., Horsti, A. and Nilsson, O. (2004)

"Sustainable Evolution of Business Models: Cases from Scandinavian Internet Portal Market." ***In the Proceedings of the 12th European Conference on Information Systems*****, June 14-16 2004, Turku, Finland.**

SUSTAINABLE EVOLUTION OF BUSINESS MODELS: CASES FROM SCANDINAVIAN INTERNET PORTAL MARKET

Abstract

Portals exist for a large number of topics and they have become quite common on the Internet. So far, researchers have not extensively studied the evolution of portals and only a few portal business models have been reported in the literature. We wonder if Internet portals are following the same evolution path, and what kinds of similarities and differences can be observed. The theoretical references, we drew on for the design of a field study, were derived from a number of theories considering portals, online communities, and network economics. We chose to research six portals, comprising Danish, Finnish and Swedish portals, of which three represent healthcare and three mobile services. We learned that the portals are quite similar in their scope of operation. Furthermore, we noticed that there is a difference between portals hosted by large organizations and portals that existing independently. All six portals are national in their geographical sphere of attention. This stresses that the local language capabilities are important when launching a portal. Finally, existing theories seem to provide an adequate theoretical vehicle for explaining the evolution of these portals. The practical contribution of this paper lays in the set of guidelines that can be applied by portal managers to identify their focus areas. It also provides some guidance about in which direction Internet portals currently develop.

Keywords: Internet portal, Portal management model, Business model, Lifecycle, Field study, Denmark, Finland, Sweden.

Introduction

Portals have become quite common on the Internet. Historically, portals started as navigation points on the growing and chaotic Internet, but have evolved into ending points – closed self-referring systems or walled gardens where users start but also stay. Overoptimistic entrepreneurs launched many portals in the late 1990's. However, the end of the dot com era also meant an abrupt end to many portals. Today we have a significantly smaller but economically healthier population of portals.

Portals exist for a large number of topics. One of the most well known is WebMD (www.webmd.com) that provides a universe of information and links about general healthcare issues. The Internet contains a plenitude of other portals on topics such as iVillage "the women's network" (www.ivillage.com). A growing number of portals are dedicated significantly for smaller language areas such as Denmark, Finland and Sweden. Local-language portals seem to thrive alongside the international ones. Good examples are the Danish women's portal in Danish language Ostrogen (www.oestrogen.dk) that largely corresponds to iVillage and a healthcare portal Netdoktor (www.netdoktor.dk) that largely corresponds to WebMD. Similarly, in Sweden and Finland there are women's and healthcare portals in respective local languages. So far, researchers have not extensively studied portal management or portal business models, and only a few portal business models have been reported in the literature and none of them are empirically tested. We wonder if portals witness similar evolution patterns? Are based on similar business models? And what kind of similarities and differences can be observed?

In this paper we seek to answer the following research questions:

- How to understand the business models and current issues of Internet portals?
- What differences and similarities exist between the evolution trajectories of similar portals?

This paper is outlined as follows. In the next section we describe portals and dimensions around which we seek to understand the evolution of Internet portals. Thereafter, we

outline a field study methodology for studying the evolution of portals. In section four we describe the evolution of six Scandinavian portals. In section five we condense our findings and discuss the differences and similarities among the six portals, and finally we make some conclusions and suggest promising areas for further research.

Portals and their management

A portal is commonly defined as a website that offers a set of services that helps users navigate the Internet. Most common services include: 1) search services, 2) content, 3) community building features, 4) commerce offerings and 5) personal productivity applications (Eisenmann and Pothen 2000). Especially services, such as a virtual community as an Internet phenomenon, have received a lot of attention (Hagel and Armstrong 1997; Rheingold 1993; Whittaker, Isaacs and O'Day 1997). A horizontal and vertical span and a geographical sphere of attention characterize a portal (Damsgaard 2002). Firstly, the horizontal dimension refers to how wide the service/product offering and the field of operation of a portal is. Some portals have a narrow horizontal scope (e.g. focusing entirely on a specific health problem), while others have a broader scope (e.g. health issues in general). Second, the vertical dimension describes the variation in the clientele or members attracted by the portal. It may have a narrow vertical scope (e.g. targeted only at young football fans) or it may have a more general scope (e.g. targeted to all aged and types of sports fans). Third, the geographical dimension refers to the geographical range of the portal. Some portals operate only within a certain part of a city, some on a national scale while others seek to unite across nations and continents. Success can be defined in many ways, but here we choose to state that success is to be the dominant portal in a self-declared scope of operations (horizontal, vertical and geographical scope) and to satisfy the portal owners. Finally, we want to add the used channel as a fourth dimension in describing the characteristics of a portal. At the moment, the most common way to interact with the portal is PC based Internet communication but, in the same time, mobile as a channel is growing due to the past development of mobile devices. In addition, mobile is used as a way to charge consumers. These four dimensions are described in Table 1.

Horizontal focus	Narrow	Broad	
Vertical target group	Narrow	Broad	
Geographical coverage	Local	International	
Channel used	PC based (Internet)	Mobile	PDA

Table 1. Portal framework.

Portal lifecycle and business model

In most of the business model discussions, portals are seen as special instance of a generic e-business model (Applegate 2001; Eisenmann and Pothen 2000; Mahadevan 2000). Eisenmann and Pothen (2000) focus on the portal business models, which are categorized according to each step of a portal's maturity, or better, a lifecycle model. The steps are: 1) Acquiring new users; 2) Turning new users into repeat visitors; and 3) Monetizing user traffic. Their ideas are similar to the portal management model (PMM) presented by Damsgaard (2002). Eisenmann's and Pothen's (2000) three-step division is also quite near to Applegate's (2001) definition of evolving e-business models, which includes four mechanisms: 1) Enhance by adding new features or improving existing ones; 2) Expand by adding new offerings or entering new markets with the same offering; 3) Extend by adding new business models or new businesses; and 4) Exit the business. In terms of further research, portal business models are interesting and important in understanding and enabling more profitable businesses on the Internet.

In this paper, we concentrate on the portal business models by using the idea of a life cycle model (see Moore 1999), which is conceptualised by Damsgaard (2002). In that paper, the author calls also for an empirical testing of the model. The PMM represents a classical life cycle model, which is especially tailored to Internet portals. The model is depicted in Figure 1. The PMM idealizes a successful portal implementation process from genesis to domination. The model consists of four stages, of which each focuses on different aspects of the portal building efforts (see, for example, Besen and Farrell 1994). The model posits that each stage poses a key challenge to be overcome in order to proceed to the next – more advanced – stage. If a challenge is not resolved properly, the portal cannot evolve, but will stagnate. The basic idea is that the portal must first attract users individually through the merit of portal content only. If users visit the

portal only once, they have no value beyond that visit. The idea is to get users to return and start a relationship with the visitor. Often the best strategy is to imitate other more established portals. In phase two, the challenge is to grow up a community from a group of users that often comes to the portal but who do not necessarily interact with one another. The key challenge here is to attract a critical mass of users. Often this is possible only by merger with other portals or acquisition. In the third phase, it is time to provide a unique service that "locks" the users to the portal. In the final phase, it is imperative to add new service innovations to the portal so that users do not have a reason to abandon the portal.

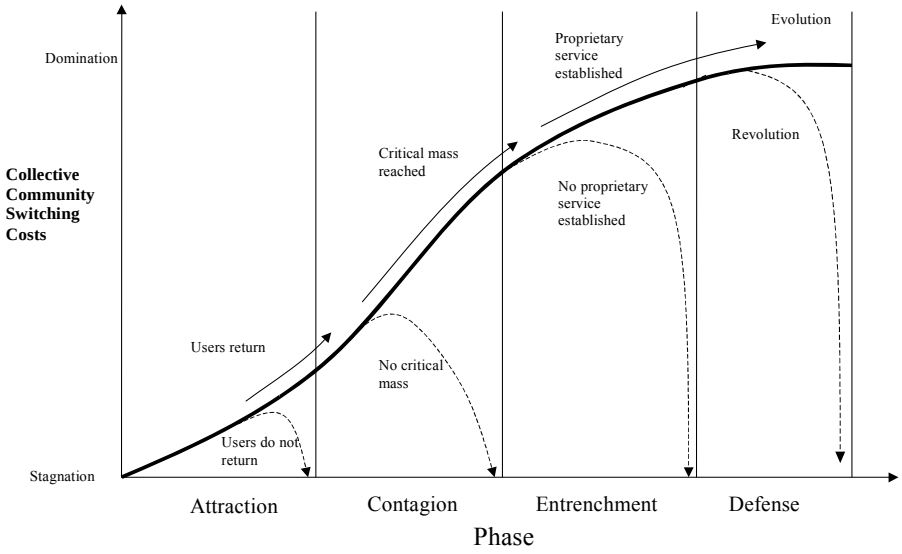

Figure 1. The portal management model (PMM).

Field study

Field study design

The theoretical references, we drew on for the construction of our data collection instrument, were a number of theories that consider portals (Eisenmann and Pothen 2000), online communities (Hagel and Armstrong 1997; Rheingold 1993; Whittaker,

Isaacs and O'Day 1997), lock-in of users (David 1985) and network technologies (Brynjolfsson and Kahin 2000; Christensen 1997; Shapiro and Varian 1999a, 1999b). For portal lifecycle and implementation strategies, we chose PMM (Damsgaard 2002). The relationships with users were examined according network economics as described in Shapiro and Varian (1999a). Moreover, the community building effort was examined using Kim (2000). Based on the theoretical concepts from this literature, we designed an interview guide to capture the portal evolution process. All questions were open-ended to allow for a rich and interactive discussion of the topics.

A multiple interpretive case study design forms the basis for the findings of this paper (Walsham 1995). The aim was to study similar Internet portals in Denmark, Finland and Sweden. The participating portals were chosen around two topics because our intent was not only to study the implementation strategy, but also the evolution proximity of similar portals. We selected three portals on healthcare and three portals on mobile services, two from Denmark, Finland and Sweden, altogether six portals. The reason for choosing healthcare portal was the relatively long time they have existed. The rationale behind choosing mobile service portals, in turn, was their actuality. In addition, mobile service portals have had the opportunity to learn from past mistakes. Hence, mobile portals and healthcare portals represent interestingly different backgrounds, industries and characteristics of portals for the empirical case study. The data gathering was conducted in February of 2003 in all three countries with informal follow-up questions to some of the portals. Table 2 outlines the interview specifications.

Organization		Line of business	Country	Interviews dates	Interviewee
1	www.netdoktor.dk	Healthcare	Denmark	February 2003	CEO
2	www.mobilstationen.dk	Mobile services	Denmark	February 2003	Portal manager
3	www.verkkoklinikka.fi	Healthcare	Finland	February 2003	Content Director
4	www.jippii.fi	Mobile service	Finland	February 2003	Vice president
5	www.netdoktor.se	Healthcare	Sweden	February 2003	CEO
6	www.telia.se/mydof	Mobile services	Sweden	February 2003	Portal manager

Table 2. The organizations, dates, and the interviewees in each organization.

Data collection and analysis

All interviews were tape-recorded. Subsequently, a case was compiled for each portal based on handwritten notes made during the interview and the tape recording. The case was compiled based on our interview guide and not chronologically from the interview itself. This was necessary as the interviewees often backtracked and clarified issues that had been covered earlier in the interview, or the interviewee's answer to a question prompted the interviewers to ask questions outside of the interview guide, or to encourage the interviewee to elaborate answers. Each case description was the foundation of the final case descriptions used here and they were shared with the individual portals for feedback and validation. Minor corrections were needed in a few cases. In addition, to ensure the quality of the interviews, some interviewees were contacted afterwards by phone calls and emails in order to get further or missed information. The cross-case comparisons and extraction of overall results were based on the case write-ups.

Analysis

In the following we analyze the six portals. First we concentrate on the three health portals and then on the three mobile service portals. Each of the cases starts with a general description of the portal and in the continuation we analyze it according to our theoretical constructions. Table 3 condenses the analysis.

Netdoktor.dk – a Danish health portal

Description

A doctor, a journalist, a 17 years old techie and a doctor's secretary founded Netdoktor (www.netdoktor.dk) in the summer of 1998. Netdoktor is privately owned and free of any interest from medical companies or institutions. Netdoktor aims at making a business out of providing clear, precise and comprehensible knowledge about healthcare in order to break down the barrier between a doctor and a patient. It is worth noticing that Netdoktor, besides Denmark, is active in Austria, Germany, Spain, Sweden (see

section 4.2), and the United Kingdom. However, this section focuses entirely on the Danish portal.

Netdoktor was a first mover in Denmark and it was largely unchallenged until 2001 where the Union of Pharmacies launched a similar portal Sundhed (www.sundhed.dk). Sundhed is not-for-profit and it is backed by a number of health related associations and semi-public institutions. Nowadays, Netdoktor and Sundhed dominate the general healthcare portal market.

Netdoktor is the marginal larger portal with 25.000 members, and it has 275.000 unique users and 10 million page views per month (January 2003). In average a user spends 12 minutes at Netdoktor. There are more than 80 doctors and professionals engaged by the portal. At the peak of the dot com era, the number of employees was close to 100. At the moment, Netdoktor employs 30 people. Annual turnover of the portal is about €6.2 million. The revenue is generated through three types of activities; sponsoring of portal content, syndication where Netdoktor pushes content to others' portals and finally the usual banner ads.

Normal visitors are 25 – 45 years old females with family, representing middle-income segment. Netdoktor has successfully launched three communities; one for depression, one baby club, and one for stopping to smoke. The baby club, for example, has almost 50% of the pregnant women in Denmark as members.

Analysis

Netdoktor represents the characteristics of wide horizontal, narrow vertical, narrow geographical scope and channel used is fixed. The portal is horizontally wide because it offers health services in general. Vertically the portal is narrow, since most of its visitors and members are female between the ages of 25 – 45 years. Netdoktor operates only in Danish so in the geographical dimension, the portal business is local, i.e. narrow scope. The most common way to interact is through fixed connections, i.e. Internet.

When Netdoktor was first launched, it focused mainly on attracting individual customers by providing attractive content as suggested in Damsgaard (2002). The

strategy was basically a Get-Big-Fast strategy (Eisenmann and Pothen 2000). As the contester Sundhed was launched, soon a struggle over market shares emerged gaining a critical mass in specific sickness areas and in health topics. One might suggest a merger between two portals, both seeking the dominant position in the same segment. However, in this particular case such development is unlikely as the underlying philosophy and business model behind the two portals are opposing. With the launch of the three forums, the focus has been expanded to considering also communities. The main reason for lock-in comes from providing superior content, branding and increasingly from the communities, but lock-in as a concept is not used systematically in the planning and execution of new activities.

Netdoktor.se – a Swedish health portal

Description

The Swedish portal Netdoktor.se originates from Denmark. Netdoktor.se is one part of netdoktor.com operating in six countries. In Sweden, the portal has two full time employees, 10 part-time ones and several experts such as doctors. Netdoktor.se's budget for 2003 amounts to € 500.000. The competitive strength of Netdoktor.se is the unique and broad content together with different interaction possibilities that the portal offers. The portal consist of three revenues sources: a) ads from the pharmaceutical industry and others who are interested in healthcare issues; b) content and service provider in healthcare related issues; and c) advanced technology solutions.

Netdoktor.se is the leading healthcare portal in Sweden with 10.000 registered members, 11.000 newsletter subscribers, 225.000 unique users, and 6 million page views and 2.000 questions sent to doctors per month (January 2003). Typical user is a female between 25 – 45 years old, and an average user visits the portal two times a month. The portal can be reached only via the web, and the most common way to interact is email. The aim of Netdoktor.se is to build stronger relationships with its users in terms of newsletters subscriptions and registrations in communities. So the portal includes 200 discussion groups and two communities where the registration is not

required. Currently, Netdoktor.se has no specific rules or etiquette beside a normal, decent behaviour.

Also other actors are trying to attract the Swedish consumers. Examples of these portals are Infomedica.se, a public service portal with about 110.000 visitors per month (2002) that is owned by Apoteksbolaget AB and Sveriges Landsting, and Medicallink.se, a commercial portal with 73.000 visitors per month (2003) that is owned by Medical Link 3W AB. Furthermore, like in Finland, telecom operators and media companies offer healthcare related content in their portals. In most of the cases, healthcare portals are based on cooperation with the content providers of health information.

Analysis

A growing interest among the Swede's for health and fitness attracts telecom and media companies to provide a healthcare related content at their portals. Beside the commercial actors, also public healthcare organisations and hospitals have shown an interest to provide medical information and services. Today, these public service portals buy a lot of content and services from external providers. For instance, Netdoktor.se delivers content to Infomedica.se, and probably this market will grow. Netdoktor.se plans not only to attract visitors to use the portal, but also to strengthen the position in the content provider market.

Netdoktor.se represents the characteristics of a wide horizontal, narrow vertical, narrow geographical scope and channel used is fixed. It is horizontally wide because it offers health services in general. Today the portal is vertically narrow because most of its visitors and members are female between the ages of 25 – 45 years, but the intention is to become vertically wide. The portal operates only in Sweden and its content is only compiled for a Swedish speaking audience, which makes the geographical dimension local. The most common way to interact is through fixed connections, i.e. Internet.

Firstly, when the portal was launched, it focused mainly on attracting individual customers by providing content as Damsgaard (2002) suggested, and the strategy was based on a Get-Big-Fast strategy as characterized by Eisenmann and Pothen (2000).

There were other actors at the scene, and it became a fight for market shares in order to gain a critical mass of users. One strategy in this situation would be a merger or acquisition, but in this case there were no other actors with a similar underlying philosophy and business model. At the moment, the portal is building and strengthening its online communities. The lock-in is to be reached by the unique and superior content, branding, and especially with communities.

Verkkoklinikka – a Finnish health portal

Description

A few doctors founded Coronaria Oy in 1988. Coronaria's is the leading healthcare portal provider in Finland at the moment. Coronaria runs two consumer healthcare portals: Poliklinikka.net (see www.poliklinikka.net) and Verkkoklinikka (see www.verkkoklinikka.fi). Coronaria founded Poliklinikka.net portal in 2001, and right after that Coronaria expanded its healthcare portal business by buying Verkkoklinikka portal that had been operating since 1996 by Medixine Oy. In this study we focus on Coronaria's Verkkoklinikka portal because it is more sophisticated in terms of services, and it is the biggest healthcare portal in Finland in the number of subscribers and visitors. Also telecom operators (such as tohtori.fi operated by Sonera Plaza) and media companies (such as MTV 3) have entered the market by offering healthcare related content in their portals. Thus, the market of the healthcare portals in Finland is a good example of the consolidation of different industries. But still Coronaria sees as its competitive strengths in the business employing several doctors who bring relevant capabilities and knowledge to the healthcare portal business.

Thus, Verkkoklinikka is the leader of the healthcare portal market in Finland. Annual turnover of the portal is about €160.000. Over 90% of its revenues are generated through advertisements of pharmacies, medicines manufacturers, doctor centres, and travel agencies. Verkkoklinikka is financially independent with a positive cash flow. In the near future Verkkoklinikka intends to implement a registration fee for its members, and offer some new features not yet offered by other Finnish healthcare portals. Mobile services used through WAP and MMS will become new sources of revenue.

Verkkoklinikka has 100.000 users per month and 25.000 active members. Furthermore, there are more than 60 doctors as advisors and professionals supporting and enabling the services offered by the portal. The most frequent visitors on the portal are females (25-45 years old) seeking information on healthcare topics for someone else apart from themselves. In addition, one special characteristic of the portals in the healthcare business is the anonymity that partly, according to the portal, restricts the foundation of real communities. There are, however, some exceptions, one discussion group has built an own web site and they have also arranged offline appointments together. Every community has leaders who are active in the discussions. Sometimes advisors, generally doctors, have to redirect the discussion and move it back on the right rails e.g. when somebody gives wrong information or discussion is in a deadlock. Emotions and sympathies are common in Verkkoklinikka portal; community members want to support each other in their problems, and they are eager to share happiness.

Analysis

At the moment, the situation in the Finnish healthcare portal market is quite stable after Coronaria bought Verkkoklinikka portal, although, there are many other portals that offer healthcare related content. Reason for this is that there are no other independent healthcare portals in Finland that take a full financial responsibility of their business. Nevertheless, Coronaria sees threats in the market that can lead to tightened competition, for example, if municipalities or hospitals construct a similar online service.

Verkkoklinikka represents the characteristics of a wide horizontal, narrow vertical, narrow geographical scope and channel used is fixed. The portal is horizontally wide, since it offers health services in general. Vertically the portal is narrow because about 88% its visitors and members are female and 73% of all visitors are 20–44 years old. Verkkoklinikka operates only in Finland, so in the geographical dimension, the portal business is local, i.e. narrow scope. The most common way to interact is through fixed connections, i.e. Internet.

Coronaria's Verkkoklinikka portal acquisition has enabled reaching a critical mass in the healthcare portal market that is necessary to become successful. The portal has created very attractive services and, therefore, visitors and members are moderately locked-in to Verkkoklinikka.

Jippii – a Finnish based mobile service portal

Description

Jippii Portal (see www.jippii.fi) operates as an independent business unit within the Jippii Group, which is the fourth biggest mobile operator in Finland. Jippii Portal's annual turnover in 2002 was €18,5 million. About 94% of its turnover results from SMS micro payments including logos, ring tones, nicknames (i.e. user registrations of its active members by SMS), and so forth. In addition, 6% of its turnover is generated through banner advertisements. All revenues are gathered through mobile touch point (i.e. SMS), but main transactions and volumes are situated on the web, such as communication in communities and discussion groups, news information, and gaming.

Jippii Portal began its operations in January 1999 employing only one worker, the founder. At its best, the number of its employees had risen up to 48 (including also countries other than Finland) during the sharpest peak of the Internet hype. At the moment, Jippii employs 14 people. It has personnel both in Finland and abroad. In total, Jippii Portal has 760.000 active webmail users per month and 85.000 of those have acquired themselves a nickname, for which they have to pay. On average, a normal visitor spends about 24 minutes on Jippii's site. The most common reason for visits in Jippii Portal is the use of the webmail. As high percentage as 88% of all Jippii Portal's visitors came to the Jippii Portal's sites on recommendation by a friend, who suggested it as worthwhile. Jippii Portal is the number one portal in Finland counted by the number of web page downloads.

In the Jippii Portal the tightest bonds between community members are on the micro level. For example, one of the pool communities, named 8-liga, has a very tight network between its community members. They are connected online daily through chat, SMS, email, and the web. Furthermore, they have also several offline appointments each year.

The 8-liga has also a leader that has successfully created own rules and standardized behaviour for his community. The 8-liga is a good example of how the community is transferred from the online world to the offline world. Generally, discussion and communication in the Jippii Portal is proper and decent because there are several sheriffs that are monitoring the discussions. Sheriffs are normal and active members that are authorized by Jippii Portal to expel someone from the portal in case of unacceptable behaviour.

Analysis

The portal market in Finland is stabilized. The biggest portals in Finland consist mainly of the telecom operators, media companies, and Microsoft. Normally Finnish companies operate in these main top five portals, and only Microsoft represents an international portal in the group. In this group, Jippii Portal is a special case because it attracts mainly teenagers and young adults when other portals are focused on adults or both teenagers and adults. Jippii Portal is characterized as an entertainment portal compared with other portals because its main focus in the offering is on web-based games and content services that are popular especially among their young customer segment.

Jippii Portal represents the characteristics of a wide horizontal, narrow vertical, local geographical scope and channel used is the combination of fixed and mobile. Horizontal dimension is wide because portal's service offering is large including e.g. webmail, chat, discussion groups, games, news service, and many other services. Due to the vertical dimension Jippii Portal is characterized as having a narrow scope because major proportion (85%) of its users and members of the portal are below 25 years old and as many as 80% of them are students. Furthermore, more than 90% out of Finnish adolescent web users are reachable at least once a month. Among visitors the portal is narrowly selected. In geographical dimensions Jippii Portal is clearly characterized as a local portal because it operates in Finnish language. The international Jippii business has operations in 21 countries including many European countries and the US. The most common ways to interact with the portal are fixed i.e. Internet and mobile.

Jippii Portal's maturity and development as a portal has been very independent right from the beginning until today's domination and success in the portal market. In Jippii Portal's history, there have not been any mergers, acquisitions or cooperation with other portals. Hence, the growth of Jippii Portal can be best described by organic growth. However, Jippii Portal has benchmarked quite a lot of the "big portals" during the growth phase, such as Yahoo. This way, it has enabled itself to learn from portal business in general. It can be stated that Jippii Portal has reached its critical mass in the selected portal market segment described earlier and it has now established gaming forums, chat rooms and discussion groups. Thus, the current state of the Jippii Portal represents the mature phase with a moderate capability to lock-in its members and visitors to its portal with its attractive communities.

Telia Mobile/MyDoF – a Swedish mobile service portal

Description

Telia Mobile – the leading mobile phone operator in Sweden – launched the portal, My Department of the Future, i.e. MyDoF (see mydof.teliamobile.se) in October 1999. The aim was to attract the early adopters and the heavy users of mobile communication. In the beginning, it was only a WAP portal but now it could be used by all kinds of digital technology. The portal employs 6 persons at the moment.

The portal is a market place for services and the purpose is to get people to use their mobile phones for other things than just talking. It is free for all Telia Mobile's customers to register as a user, but the use of the services is charged. The typical user is a heavy user in the age 23 to 35 years old. The content on the portal is produced both by users themselves and by content providers on a revenue share basis. The uniqueness of the portal is the mail adapter, to which it is possible to connect 10 different mail accounts. There are no intentions to create communities on the portal. The revenues are generated from the mobile use. There are no advertisements on Telia branded sites. MyDoF should not be seen as a product, rather a channel through which other products are marketed.

Analysis

MyDoF represents the characteristics of a wide horizontal, narrow vertical, narrow geographical scope and channel used is the combination of fixed and mobile. The wide horizontal scope is indicated by the broad offer of services in the mobile phone area. The vertical scope is narrow because of the user group that consists of people aged 35 and below. While the portal is operating only in Sweden and its content is only compiled for a Swedish speaking audience, is the geographical scope narrow. The most common ways to interact with the portal are fixed and mobile.

When MyDoF was launched it focused on attracting individual customers by providing content, and the strategy was basically an As-Income-Will-Allow strategy. The next strategy is building community but no such activity was reported. Lock-in factors could be found in the unique services as the mail adapter and in the loyalty program that give the user points which could be redeemed to products or services.

Mobilstationen – a Danish mobile service portal

Description

Mobilstationen (see www.mobilstationen.dk) was launched in 2000, and it operates as an integrated business unit within Sonofon that is a Danish telco incorporated in 1991. Today Sonofon is the second largest telco in Denmark with more than a million mobile subscribers and turnover of more than € 400 million. Sonofon is owned by Norwegian Telenor with a 54 % holding, and BellSouth holds the remaining 46 %.

Mobilstationen was launched in 2000 to support Sonofon customers in using their mobile phone in a wider application area than just interpersonal voice communication. There are only three people employed directly with Mobilstationen while staff from the whole Sonofon organization can be chartered on an ad hoc basis.

Mobilstationen is not trying to build a separate relationship, but it complements and adds to the Sonofon relationship with a given customer. Some of the most popular services are downloads of logos and ring tones that relate to successful TV

commercials. Everybody can use the basic services but Mobilstationen has a special section for members. Mobilstationen does not organize any communities around itself.

Analysis

Mobilstationen represents the characteristics of a wide horizontal, narrow vertical, narrow geographical scope and channel used is the combination of fixed and mobile. Horizontal dimension is wide because portal's service offering is large. The visitors of the portal are typically Sonofon's younger customers (below 35 years old) therefore the portal is vertically narrow. In geographical dimensions Mobilstationen is characterized as a portal in Danish language and therefore local. The most common ways to interact with the portal are fixed and mobile.

Development of Mobilstationen development as a portal has not been commercially driven, because it is an inseparable part of Sonofon. There have not been major mergers, acquisitions or cooperation with other portals, and most of the content comes from external providers. Growth of Mobilstationen may be best described as a slow growth one. Mobilstationen does not posses a monopoly in any areas, nor has it communities. It has, however, the role of a support function for Sonofon, which main objective is to sell voice communication. Thus, the current state of Mobilstationen has a low capability to lock its members and visitors to its portal. Mobilstationen is not among the top 50 most popular sites in Denmark.

Discussion and conclusions

All six portals are identical when it comes to scope. They are horizontally wide focusing on a wide array of topics. On the other hand, the horizontal scope of the portals is constantly challenged by rival portals seeking to offer a more focused service. This phenomenon is very much in line with the traditional service differentiation. This will happen when the market for portals matures, and the technology to operate portals becomes widely available. At the same time, the fight over suitable topics will intensify.

Vertically considered, all portals seem to attract quite a narrow customer segment. The health portals seem to attract mainly women between the ages of 25 and 45, whereas the mobile service portals attract mainly people below 35 years of age of both sexes.

In the geographical dimension, the local language seems to be a deciding character for delimiting the geographical scope. Let us take an example of choice of health portal: since an average person does not know the medical names in foreign languages, people tend to choose the local language portal. This was confirmed as none of the three health care portals reported any serious international competition. The choice of the local mobile service portal can be explained by the locality of mobile operators' infrastructure. It cannot be reached from the outside. We believe that the local language is paramount, and this is a general observation that can be applied across the entire spectrum of portals.

In the near future, the portals are maturing also due to the channel dimension. The biggest growth is expected in the combination of fixed and mobile channels. In other words, the idea of multi-channel environment is offering new challenges for the portal market. The Jippii Portal gives evidences that fixed channel is used as a free of charge channel to attract critical mass to the portal, and mobile channel is a way to get revenues from the portal products itself. In the case of pure fixed channel, portals generate their revenues mainly from advertisements.

Large host organizations embed both Telia Mobile and Mobilstationen, and therefore they have a primary goal of providing support and enhancing relationship with the host's existing customers. They have both been protected from market forces. Furthermore, they are both quite young when compared with their more independent Finnish brother – Jippii – operating as an independent business unit. However, compared with the health portals, the mobile services portals are generally less matured.

The healthcare portal market has witnessed a large shake out after the dot com era. In Finland this has led to mergers and in Denmark the company has sold off its Swedish healthcare portal-branch. All three healthcare portals have cut down substantially on

staff and operating costs since the mid 2000. The fact that they are still in business is a strong claim to the current soundness of their business model. Banner ads as a means of income are not the dominant stream of income. Mostly, the portals generate income from sponsorships. In the Swedish market, convergence only occurs in one portal, whereas in Finland and in Denmark, a stand off between two rivals exists. One could expect mergers, but at least in Denmark the institutional context makes a merger very unlikely. In Finland, the main healthcare portal is already a result of a merger, and no signs of further consolidation are foreseen in the near future.

Communities are becoming increasingly important for the healthcare portals as a means of drawing the users closer to the portal and to increase user loyalty. Management of the communities is still in its infancy both conceptually and operationally. This does not mean that community roles are not evolving, or that community leaders are not emerging. In fact, it means that the portals are not in control of their communities and here is where the portals should focus next.

PMM depicts all the six portals and characterizes their business. They all have initially concentrated on attracting customers on an individual basis. Later, when the portal has matured the focus has been extended to include community-building efforts. Only a few of the portals are now ready to consider, how to establish a proprietary service to link the users and the communities firmly to the portal. We hope to revisit the portals after twelve months to learn about their status at that time.

Further research is required to establish a firm understanding of portals and their management. Scandinavian countries examined are apart from language quite similar both in regard to culture, economy and population density. To further explore and validate various models and theories of Internet portal it is promising research avenue to extend the data material to different socio-economic setting.

Healthcare portal	Netdoktor.dk	Netdoktor.se	Verkkoklinikka
Country	Denmark	Sweden	Finland
Date when launched	1998	1998	2001
Number of fulltime employees	30	2+	3
Horizontal, vertical, geographical scope and channel used	Hor: Wide Ver: Narrow Geo: Local Cha: Fixed	Hor: Wide Ver: Narrow Geo: Local Cha: Fixed	Hor: Wide Ver: Narrow Geo: Local Cha: Fixed
Type of services	Health related information	Health related information	Health related information
Usage	Number 1 in healthcare portals	Number 1 in healthcare portals	Number 1 in healthcare portals
Community	3 communities	2 communities, 200 discussion groups	61discussion groups
Competitors	Duopoly in the market	Almost a monopoly	Duopoly in the market.
PMM phase	Phase II	Phase II	Phase II

Mobile portal	Jippii	Telia Mobile	Mobilstationen
Country	Finland	Sweden	Denmark
Date when launched	1999	1999	2000
Number of fulltime employees	14	6	3
Horizontal, vertical and geographical scope	Hor: Wide Ver: Narrow Geo: Local Cha: Combination	Hor: Wide Ver: Narrow Geo: Local Cha: Combination	Hor: Wide Ver: Narrow Geo: Local Cha: Combination
Type of services	Nicknames, ring tones, logos, games, etc.	Mailadapter, ring tones, logos, games, MMS, etc	Ring tones, logos, games, and MMS
Usage	Third most visited site in Finland	One of the leaders	Not among top 50 in Denmark
Community	20 gaming groups, 13 chat rooms and 70 discussion groups	No community	No community
Competitors	About 4 strong competitors.	None, since it mainly provides services to existing customers	None, since it mainly provides services to existing customers
PMM phase	Phase II	Phase I	Phase I

Table 3. Overview of the six portals.

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Paper IV

Horsti, A. (2006)

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COMBINING CRITICAL SUCCESS FACTORS AND LIFE CYCLE MODEL TO ENABLE EVALUATION OF E-BUSINESS MODELS

Abstract

Electronic business models (e-business models) are a relatively new and growing research topic within Information Systems Science. The purpose of the paper is to combine critical success factors (CSFs) and life cycle model literature as ways to evaluate e-business models. The study draws empirical data from a survey among leading Finnish companies. In the survey, 104 respondents assessed 20 CSFs gathered from management literature as well as the importance of each CSF at different life cycle stages of an e-business model. Theoretically, the observations give evidence on the changing importance of various CSFs at different stages of an e-business model's life cycle. Primarily, the risk level and effectiveness of e-business model were recognized to distinguish CSFs in the life cycle model. In addition, the customer type (either B2B or B2C), the position in the value chain, and the service or product-orientation seem to affect which CSFs are essential at the various stages of e-business model's life cycle. Managerially, the different weightings of the importance of CSFs in the various stages of an e-business model's life cycle reflect the practical implications of the paper. The results also suggest that different CSFs are crucial at each stage of a life cycle. The results are likely to be useful for the venture capitalists and entrepreneurs in planning and making decisions regarding the long-term scenarios for e-business models.

Keywords: electronic business model, evaluation, life cycle model, critical success factors

Introduction

Electronic business model (e-business model) research is a relatively young field within information systems science (ISS). When discussing e-business models, the role of information technology in producing opportunities for competitive advantage is seen relevant [36]. During the last few years, the increasing interest in business models has created a need for academic research including definition, taxonomy, description, evaluation, and other relevant topics enhancing the understanding of business models. However, several academics have defined the term business model [see e.g. 1, 3, 37, 40, 42]. Some of them have presented a categorization of structural components or the building blocks (i.e. taxonomies) of business models [3, 17, 27, 37, 42]. In addition, lately an interest for evaluating the business models has grown and it has become a relevant area of the business model research [30, 31].

The aim of this study is to enhance the understanding of e-business model evaluation as a part of IS research. In the paper, we draw research results from the survey data gathered from the 104 respondents of 60 Finnish companies including 104 business units. Based on the data, we have analyzed 20 CSFs and their behavior at each e-business model's life cycle stage. In addition, the paper will give managerial advices including critical success factors (CSF) to which the management should address its attention. The paper seeks to answer the following research questions:

(i) Do the set of CSFs change in various stages of an e-business model's life cycle?

(ii) Does the life cycle stage affect the importance of a specific CSF?

The paper is organized as follows. The aim of the section two is to review the literature related to e-business models, CSFs, and the life cycle model. In the third section, we present the research methodology and describe the characteristics and demographics of the survey data. In the fourth section, we analyze the survey data regarding the e-business model's life stage mappings. In the remaining sections, we draw conclusions and present the limitations of the study to which we propose avenues for further research.

Literature review

In the literature review, the most essential research domains are discussed. Firstly, the concept of e-business model is presented. In the second and third sections, the evaluation of e-business models is reviewed in terms of CSFs and life cycle model.

E-business models

We can observe that originally the business model discussion was initiated by the business simulation game articles [4] in which the abstraction of business was emphasized and seen relevant. Today, the term "business model" has achieved a growing attention being one of the most discussed concepts after the Internet hype of the late 1990's. During the 1990's, business model was mainly used in the context of venture capitalists explaining some of the most unrealistic Internet business models in the daily business news. At the same time, research focusing on the term business model was about to begin.

The first ignitions of business model research were the listings and short descriptions of various generic business model types [e.g. 37, 40]. In addition, several studies adopted a specific view point in which the term business model was used to explain different market structures [27], the continuous change of business over time [25, 39], asset portfolio management [7] or the patenting of business models and unique processes [6].

Secondly, another stream of literature on business models emerged recognizing and analyzing the components and elements of a business model. Furthermore, the practical cases and empirical data were utilized for the first time enabling an avenue for convincing academic publications. Weill and Vitale [42] explored eight atomic e-business models that can be used as building blocks in multiple ways to create new e-business models. In addition, they introduced a practical way to map an e-business model within one drawing and they emphasized the evaluation of e-business models [42]. In this study, we have adopted the business model definition stated by Weill and Vitale [42]: “the business model is a description of the roles and relationships among a

firm's consumers, customers, allies, and suppliers that identifies the major flows of product, information, and money, and the major benefits to participants". In addition, Amit and Zott [3] illustrated three business model constructs - content, structure and governance - basing their research on the strategic management theories and especially on the value creation. Also Afuah and Tucci [1] presented eight business model components and they recognized a need for the evaluation of business models. Osterwalder and Pigneur [30] provided four ontological pillars of an e-business model including product innovation, customer relationship, infrastructure management, and financials following the basic idea of balanced scorecard (BSC) introduced by Kaplan and Norton [19]. Hedman and Kalling [17] presented seven business model components. For the first time, the scope of management was identified as a crucial component of the business model concept. The aim of the component is to describe the dynamics of the business model over time as well as cognitive and cultural constrains that managers have to cope with. All the discussions of the business model components share the notion that a business model is an abstraction of a business identifying how a current business profitably creates value.

Thirdly, according to Osterwalder et al. [30], business model research has lately focused on the practical tools that can be used in management and in IS applications. For example, software-based tools enable the design, visualization, comparison and simulation of complex business models [30]. In addition, the evaluation of e-business models has been regarded as a relevant topic in the forthcoming business model studies [31].

Critical success factors

The concept of success has been studied throughout a wide range of academic literature [e.g. 9, 13, 40, 42]. The concept of CSFs was developed by Daniel [12] and refined by Rockart [37]. CSFs are the focus areas contributing most to the success of a company and to its competitive position. Therefore, it is crucial for companies to pay attention in managing these factors.

CSFs are regarded as an accepted and widely-used concept [e.g. 2, 22, 33, 34]. CSFs can be regarded as a top-down analysis focusing on a core set of essential issues [9]. However, CSFs have also been criticized by academics and practitioners. Especially among academics, the validity of the CSFs concept has been questioned, and among practitioners the complexity of the CSFs concept may finally lead into a too simplified business environment [9].

Despite its shortcomings, CSFs can be seen as a common and recommended basis for the evaluation of success within IS research: defined factors and measures are always required in order to evaluate success. Several studies have gathered empirical data focusing on evaluating the success of a particular IT system implementation [10, 23, 26]. Also information systems [13] and electronic commerce [14, 19, 20, 41] have been interest areas when discussing success.

Peffers et al. [34] developed the CSF concept by coining the term critical success chain (CSC). CSC follows the basics of a three-element model of personal constructs theory [21] including IS attributes, CSF performance, and firm objectives. According to the CSC, if the firm has an aim to enhance a system with certain attributes, the use of the system will result in outcomes that are observable as changed CSF performance, which is, in turn, required to achieve relevant firm objectives [34].

Life cycle model

The product life cycle (PLC) concept is described as the evolution of a product, as measured by its sales over time [11, 18, 24, 32]. Patton [30] went further and described that the main idea is to create a basis for planning the strategy of profitable product exploitation. According to Levitt [24] and Cox [11], different strategies are adopted at the various stages of a product life cycle. After this, different strategic actions of each life cycle stage were included [18]. Thus, these studies indicate that management has to focus on different issues in the early phase compared to the maturity phase of a product's life cycle.

Life cycle model has been widely adopted in other disciplines too. Within the IS science, the life cycle model has been used, for example, in the context of the computer-based information systems [29], systems development [28] as well as business process re-engineering [23]. According to Ginzberg [16], the implementation of information systems is not a discrete event or activity that can be evaluated or studied with simple research approaches at one point of time, since attitudes and beliefs may change over the various stages of the implementation process. Furthermore, most of the e-business model studies have adopted a static view on e-business models rather than the adoption of development, dynamics and maturity of a business model along time [8]. Hence, this is one of the first studies to introduce the life cycle model in the context of e-business models.

Methodology

The section discusses the study design. Also the demographics of the respondents are presented.

Data collection and sample

We gathered data for the study from various sources being the expert interviews, a literature review, the pilot testing of the questionnaire, and the subsequent survey. Firstly, we began the empirical study in the fall 2003 with qualitative research methods. We interviewed 17 managers from five e-business models representing five industries: paper, media, traveling, telecom, and logistics. The main purpose of these interviews was to identify CSFs affecting their e-business models. At the same time, a literature review was conducted analyzing previous success factor studies from the academic journal articles. However, after the interviews and literature review we had a raw listing of CSFs. Next, the number of initial CSFs was reduced by excluding the duplicates and similar factors.

Secondly, we decided to include the CSFs from the interviews and literature as variables in the pilot-test survey. The questionnaire was pilot-tested by ten chosen experts

representing both practitioners and academics. Thirdly, the questionnaires were sent by mail to the respondents. In the questionnaire, a respondent was able to choose one or several life cycle stages indicating the existing relevance of the current success factor at a particular stage of the life cycle. In this study, the stages of a business model's life cycle were defined as introduction, growth, maturity, and decline following the concept of PLC [e.g. 18, 32]. In addition, common questions related to the basic demographic data were included.

In this research, the unit of analysis is a business unit, since on the company level there may exist more than one business model whereas on the business unit level it is typical to have only one business model. However, we chose a sample of 450 managers representing 450 business units in 61 companies. All the respondents were practitioners on the managerial levels of their organization, and they all had experience from electronic business. The respondents were chosen from Finnish international companies following two criteria: 1) the company is among the top 30 Finnish companies according to their revenue and/or 2) the company is listed among the top 100 on-line brands in Finland. Finally, we had a list of 450 business units from 61 companies including various industries, traditional large companies as well as some of the most successful small e-commerce and portal companies.

Demographics

The total number of responses amounted to 104 out of the 450 questionnaires, which yielded a 23-percent response rate. We received properly filled questionnaires from 60 companies including 104 business units. Respondents worked primarily (46 %) on the managerial level of the organization, or as directors (29 %). Forty-five percent of the respondents had five to nine years of valid e-business experience, while 23 percent had as much as ten years or more of e-business experience.

Most of the business units in the sample have a long tradition of using EDI in their business operations. In many traditional manufacturing business units, EDI is still seen

as a crucial component of e-business. Eighty percent of the business units had started using EDI before 1993 and the Internet was used by 95 percent of the business units.

Analysis and results

In assessing the CSFs, we adopted the life cycle model to distinguish the importance of a particular CSF at the different stages of an e-business model's life cycle. In this section, we present the analysis and results of the study.

E-business model's life cycle

Our analysis is based on a questionnaire in which we asked respondents to choose one or more life cycle stages, including introduction, growth, maturity, and decline, at which a respondent sees a particular CSF as crucial. By allowing respondents to choose as many stages as they found relevant, we prevented unnecessary limitations from the respondent's point of view.

Table 1. Importance of CSFs in each life cycle stage.

	CRITICAL SUCCESS FACTOR OF E-BUSINESS MODEL	**E-BUSINESS MODEL'S LIFE CYCLE STAGE**			
		Intro	**Growth**	**Maturity**	**Decline**
V1	E-business related personnel is highly experienced	43 %	**76 %**	48 %	22 %
V2	E-business related personnel possesses relevant know-how and capabilities	63 %	**90 %**	45 %	26 %
V3	E-business model can be regarded as an innovative forerunner in terms of products, services and technology	**64 %**	61 %	24 %	11 %
V4	The e-business model related customer data is gathered and utilized	49 %	**70 %**	50 %	35 %
V5	E-business model related software and hardware are stabile	39 %	**78 %**	69 %	30 %
V6	E-business model related multi-channel environment is well-managed including both the traditional and electronic channels	35 %	**68 %**	55 %	23 %
V7	Systematic risk management minimizing the vulnerability of e-business model is regarded	54 %	**68 %**	53 %	35 %

	relevant				
V8	E-business model related management accomplishes well networking and partnering relations	48 %	**76 %**	49 %	23 %
V9	The quality of products and services in e-business model is good	40 %	72 %	**73 %**	34 %
V10	Products and services in the e-business model are easily accessible and usable	52 %	**77 %**	58 %	22 %
V11	E-business model related operation and products / services offered have a strong brand in the market	48 %	**69 %**	47 %	15 %
V12	E-business model related customer needs are identified and understood	51 %	**79 %**	59 %	35 %
V13	E-business model's offering is targeted and customized	42 %	47 %	**55 %**	27 %
V14	E-business model related management is committed	64 %	**69 %**	41 %	27 %
V15	Management has valuable capabilities in managing the e-business model	57 %	**70 %**	36 %	30 %
V16	E-business model's operations and processes are cost efficient	22 %	52 %	**71 %**	**47 %**
V17	Decisions regarding the competitive strategy of e-business model are evident being either cost leadership or differentiation strategy	27 %	**72 %**	66 %	22 %
V18	E-business model's customers are satisfied and loyal	32 %	70 %	**75 %**	45 %
V19	IT operations and security in terms of software and hardware are reliable from internal point of view	58 %	71 %	**78 %**	50 %
V20	IT operations and security in terms of software and hardware are reliable from external point of view	64 %	**78 %**	71 %	53 %
	ALL VARIABLES	**44 %**	**70 %**	**57 %**	**31 %**

In investigating all the variables at the e-business model's four life cycle stages, results indicate that the growth stage is at the center of interest (70 %) and on the contrary the decline stage (31 %) gets the least attention. In reviewing specific CSFs, we discover that *The innovativity of e-business model* (V3) is the most emphasized in the early stages of an e-business model's life cycle. In the growth stage of the life cycle, *The capabilities of personnel and management* (V2, V15) are tested in an e-business environment where competition becomes challenging for any e-business model. An e-business model also has to show its competitiveness in terms of *The ease-of-use of products and services* as well as in *The fulfillment of customer needs* (V10, V12). In the

maturity phase, *Customer satisfaction and loyalty* (V18) are stressed. In addition, customers are seeking *A reliable offering with high quality* (V9) in which the role of *Targeted and customized offering* (V13) is becoming essential. In the decline stage of an e-business model's life cycle, the most essential factor is *Cost efficiency* (V16). As expected, *The reliability of IT operation and security* (V19, V20) seems to be relevant during all stages.

We continued the analysis by reviewing the combinations of each life cycle stage markings (see Table 2). Altogether, the respondents had 15 options from which to choose a proper combination of life cycle stages that they regard relevant for a specific CSF. This way, we were able to identify the number of the life cycle stage markings for all the 20 CSFs. Due to the large number of options, we aimed at focusing on the most essential combinations by grouping them into the four groups: G1 - Introduction & Growth, G2 - Growth & Maturity, G3 - Maturity & Decline, and G4 - All the life cycle stages. In addition, we excluded the options (i.e. Options: 5, 8, 9, 10, 11 and 13) having less than 21 markings (see Table 2, the sum of V1-V20 column). Hence, out of the 15 options, nine were taken into account in the groupings (G1, G2, G3 and G4) for the further analysis.

Table 2. Frequencies of life cycle stage mappings.

Option	Intro	Growth	Maturity	Decline	Group*	Sum of V1-V20
1	X				G1	190
2		X			G1	359
3	X	X			G1	295
4			X		G3	279
5	X		X		0	8
6		X	X		G2	199
7	X	X	X		G2	99
8				X	0	13
9	X			X	0	20
10		X		X	0	13
11	X	X		X	0	11
12			X	X	G3	92
13	X		X	X	0	3
14		X	X	X	G4	118
15	X	X	X	X	G4	356

*) Value labels: G1=Introduction&Growth; G2=Growth&Maturity; G3=Maturity&Decline; G4=All stages

Correspondences between life cycle stages and variables

In order to illustrate the situation between the 20 variables and four life cycle stage groups, we decided to use correspondence analysis (Figure 1). The variables are adequately plotted (Sig. 0.000) in the two-dimension correspondence analysis explaining 85.5 % of the variation. Dimension 1 explains 56.4 % of the variation. On the first dimension, *The innovativity of e-business model* (V3) is plotted far left whereas *The reliability of IT operations and security* (V19, V20) on the right. Evidently, the risk level of the e-business model seems to become the most essential dimension to categorize all the variables in the correspondence analysis. Dimension 2 explains 29.1 % of the variation in which *The capabilities of personnel and management* (V2, V15) are plotted on the top of the matrix and *Cost efficiency* (V16) and *Targeted and customized offering* (V13) on the bottom. We regard that the efficiency of an e-business model seems to spread the variables along the Dimension 2.

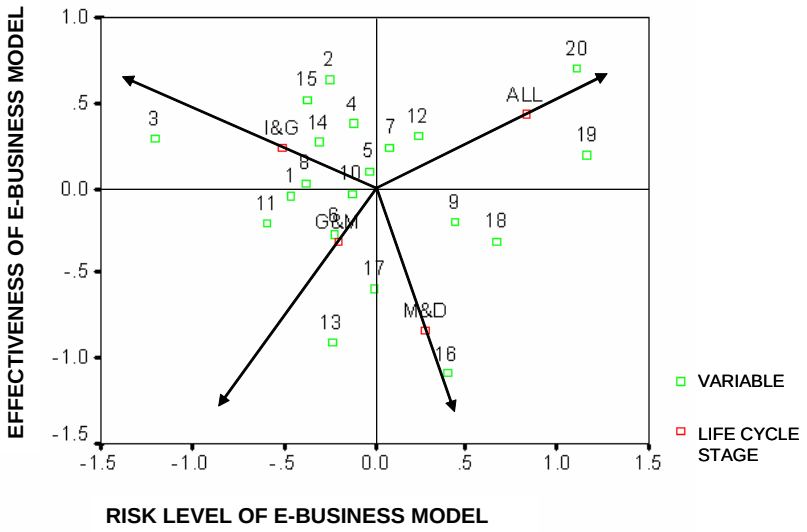

Figure 1. Correspondence analysis.

According to the correspondence analysis, we can derive the following results. *The innovativity of e-business model* (V3) and *Capabilities of management* (V15) are crucial

in the introduction and growth stages. Furthermore, *Chosen competitive strategy* (V17) is stressed in the growth and maturity stages and *Cost efficiency* (V16) in the maturity and decline stages. Finally, *The reliability of IT operation and security* (V19, V20) are significantly emphasized during all the stages of the life cycle.

Combining e-business model's background with life cycle stages

In the earlier sections, we discussed the four groups formed based on the life cycle stage including Introduction & Growth (G1), Growth & Maturity (G2), Maturity & Decline (G3), and All the life cycle stages (G4). We were also interested in comparing the groups against the characteristics of the respondent's e-business model. In order to distinguish the various life cycle stages, we excluded the G4 from the analysis. The analysis was accomplished with One-Way ANOVA.

Firstly, we examined the customer type of the e-business model being either B2B or B2C. The respondents representing B2C-focused e-business models see that *risks should be managed* (V7, V19) earlier in the life cycle compared to the representatives of B2B-focused e-business models. The result could be explained by the notion that generally the risk management is more enhanced in the B2B-focused e-business models, since both the transacting companies have to manage their risks. On the contrary, IT security and reliability have to be considered with the B2C-focused e-business models earlier compared to the B2B ones, since most of the consumers are not always aware of the data security related matters.

Secondly, we examined the variances between the e-business models having an offering that includes either products or services. The analysis demonstrates that *Customer satisfaction and loyalty* (V18), as well as *Advanced and well-managed multi-channel environment* (V6) are likely to be more crucial variables for the product-oriented e-business models earlier in the e-business model's life cycle compared to the service-oriented e-business model.

Thirdly, we studied e-business model's life cycle stages by analyzing the position of e-business model in the value chain. We followed the categorization made by Benjamin and Wigand [5]. The early phase of the value chain is a producer, the middle phase is a wholesaler, and the final phase is a retailer. For the producer-type of e-business models, *Advanced and well-managed multi-channel environment* (V6) with *Satisfied and loyal customers* (V18) is more relevant in the early stage of the e-business model's life cycle compared to the retailer-type of e-business model. The results show that the producer-type of e-business model typically is a product-oriented e-business model with B2B customers. In addition, the producer-type of e-business models need to *target and customize their offering* (V13) earlier compared to the retailer-type of e-business models, since the B2B-type of customers are likely to require targeted and customized offerings more compared to the B2C ones that are seeking mainly standardized offerings.

Table 3. Analysis of One-Way ANOVA.

Variable	Grouping criteria	N	Mean*	F	Sig.
V7	B2B	49	2.02	3.92	.052
	B2C	16	1.69		
V19	B2B	37	2.14	3.66	.062
	B2C	11	1.55		
V6	Product oriented	30	1.43	5.67	.020
	Service oriented	52	1.88		
V18	Product oriented	23	1.61	8.83	.004
	Service oriented	44	2.25		
V6	Producer	32	1.41	3.81	.026
	Wholesal./Intermed.	13	1.92		
	Retailer	37	1.92		
V13	Producer	36	1.67	2.67	.075
	Wholesal./Intermed.	14	1.86		
	Retailer	40	2.15		
V18	Producer	25	1.60	8.41	.001
	Wholesal./Intermed.	12	1.83		
	Retailer	30	2.47		

*) Value labels: 1=Introduction&Growth; 2=Growth&Maturity; 3=Maturity&Decline

Discussion and conclusion

This research presents evidences that CSFs seem to be different in the various stages of e-business model's life cycle. The two main dimensions to categorize both CSFs and life

cycle stages are the risk level and the effectiveness of an e-business model. Some of the CSFs are likely to be stressed in the early stages of the life cycle whereas others are essential in the latter part of the life cycle. In addition, the business environment (e.g. customer type and position in the value chain) seems to affect CSFs that are selected as crucial. Hence, these interesting results enable us to derive both the theoretical and managerial implications.

The theoretical contribution of the research can be divided into three issues. Firstly, we have combined the CSFs and the stages of life cycle for the first time as a way to evaluate e-business models within IS. Both of them are well-known and recognized in several academic studies [2, 8, 34] despite the recognized shortcomings [9]. Secondly, in synchronizing the CSFs and the stages of a life cycle model, it gives us an opportunity to underpin the characteristics of an e-business model's life cycle as well as to gain an understanding of e-business models. Thirdly, the customer type (either B2B or B2C), the position in the value chain, and the service or product-orientation seem to affect what CSFs are chosen to be essential in the different stages of e-business model's life cycle.

The managerial implications are clear. Results regarding the importance of various CSFs in each stage of an e-business model's life cycle may offer practical insights for the managers. It is crucial to understand that CSFs will change when an e-business model matures. In other words, the focus areas are different in the early stage of e-business model's life cycle compared to the latter parts. The results may also be useful for the venture capitalists and entrepreneurs evaluating or planning new e-business models in the long-term.

Like most survey studies, this study is subject to limitations. Firstly, the sample consisted of only Finnish firms operating in local and international markets. Hence, a larger sample including companies and their business models from other countries would give a richer picture of the subject matter. Secondly, although we sent out an equal number of questionnaires to large companies (top 30 Finnish firms), the number of responses received from the companies varied. For example, we received nine

responses from the Finnish Post and only two from Nokia. This is a typical challenge in all the studies utilizing the survey as a primary data collection technique.

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Paper V

Horsti, A., Penttinen, E., Saarinen, T. and Korhonen, P. (2006)

"Explaining Electronic Business Profitability by Using Critical Success Factors Related to Market Offerings." Unpublished.

EXPLAINING ELECTRONIC BUSINESS PROFITABILITY BY USING CRITICAL SUCCESS FACTORS RELATED TO MARKET OFFERINGS

Abstract

We have studied how a business unit's market offering characterized with nine success factors explain electronic business profitability. Instead of using the original success factors, we found that four principal components: quality*,* customization*,* ease of use *and* wideness of product/service offering *can be used without losing essential information.* Quality *and* wideness of product/service offering *turned out to be the most important components in the whole data set. When we used contextual variables to characterize the business units,* customization *had a positive effect on profitability for manufacturing units, B2B firms and early adopters. Service units and B2C firms should be wary of customizing their offering.*

Keywords: success factors, business model, market offering, manufacturer, service

Introduction

This study focuses on the company's product/service offering. Frequently, managers need to make decisions concerning the format of their company's product/service offering: for example, what is the level of customization, how much effort to put to quality improvement, and what is the range of products and services offered to customers? Concrete strategic tools available for companies include bundling, total quality management, customization etc. The objective of this research is to examine the effect of these strategic decisions on electronic business profitability. To do this, we use the critical success factors (CSF) concept.

Since its conception, CSF has been widely used within the IS research field [23]. Initially, Rockart [28] defines critical success factors as the few key areas where "things must go right" for the business to flourish. For the purposes of our research, we collected nine factors related to the product/service offering from the extant literature and expert interviews with managers. These factors were: "easy access to the offering", "quality of the offering", "economic pricing", "easy to use", "life cycle management", "customer feedback utilization", "targeted services", "simple and clear features", and "wide range of goods and services". Then using a survey consisting of 111 responses from 60 companies, we validated the 9-item instrument and were able to summarize the information from these initial factors using four principal components. These components were named as *quality*, *customization*, *ease of use*, and *wideness of product/service offering*.

We used these four principal components to explain the business unit's electronic business profitability. We found that *quality* and *wideness of product/service offering* have positive effect on electronic business profitability. In addition, we used type of business unit (manufacturing-unit vs. service-unit), type of customer (B2B vs. B2C), and maturity of technology adoption (early vs. late) as contextual variables and found differences between these groups. Concerning these contextual variables, we found that in addition to the *quality* and *wideness of product/service offering* components, *customization* has a positive effect for manufacturing units, B2B firms, and early

technology adopters. We provide a more in-depth discussion on these finding at the end of this paper.

The paper is organized as follows. The second section briefly presents the literature related to critical success factors, business models, and market offerings. In addition, we present the overall conceptual framework and operationalize the constructs used in this study. In the third section, we present the research methodology and describe the survey data. In the fourth section, we validate the initial measurement instrument and extract the four main factors. In the fifth section, we test the effect of these four factors on the business unit's electronic business profitability. Finally, we draw conclusions and present the limitations to which we propose avenues for further research.

Literature review and development of conceptual framework

Critical success factors and market offerings

Typically, various measures are used to express success. The concept of critical success factors (CSFs) was developed by Daniel [9] and refined by Rockart [28]. CSFs are the focus areas that most contribute to the success of the company and to its competitive position. Therefore, it is crucial for companies to pay attention to these factors and manage them well.

CSFs are regarded as an accepted concept, which is widely used in several studies. It yields a top-down analysis that focuses on a core set of essential issues [3]. On the other hand, CSFs have been criticized for being too difficult to use, the validity of the concept has been questioned, and the complexity of the concept may finally lead to too simplified a business environment [3]. However, despite its shortcomings, CSFs can be seen as a common concept in IS research. Many of the success studies focus on particular IT systems implementations [4, 20].

Torkzadeh and Dhillon [30] study the measures of Internet commerce success following the proposition of Keeney [18]. They use a value-based approach in which 199 Internet

commerce customers are individually asked questions concerning values. The 125-item list of measures influencing Internet commerce success was also used in our study as a starting point in gathering the CSFs for our survey. Chang et al. [5] examine the developed measurement models by Torkzadeh and Dhillon [30] using a sample of 331 respondents. As a result, Chang et al. [5] confirm the validity of the original measurement models and improve the instrument by reducing the number of factors.

DeLone and McLean [10] examine information systems success and introduce a comprehensive taxonomy, which consists of six interdependent constructs: system quality, information quality, use, user satisfaction, individual impact, and organizational impact. Later, they update the model to include the success metrics related to electronic commerce. Also, they divide quality-related issues into information quality, system quality, and service quality [11].

The market offering is an essential part of a company's business model [1, 13]. According to Weill and Vitale [32], *"the business model is a description of the roles and relationships among a firm's consumers, customers, allies, and suppliers that identifies the major flows of product, information, and money, and the major benefits to participants"*. Hedman and Kalling [13] introduce a generic business model framework including seven business model components: (1) customers, (2) competition, (3) offering, (4) activities and organization, (5) resources, (6) suppliers, and (7) scope of management. In our study, we focus on the offering component of the business model and define it on the level of a business unit. We define a business unit's offering to the market as consisting of goods and services.

For the purposes of our study, we collected success factors that relate to the company's market offering. Before conducting the survey, we gathered the data for the study from various sources such as literature review, interviews, and the pilot testing of the questionnaire. The resulting nine factors are: (1) "easy access to the offering", (2) "quality of the offering", (3) "economic pricing", (4) "easy to use", (5) "life cycle management", (6) "customer feedback utilization", (7) "targeted services", (8) "simple and clear features", and (9) "wide range of goods/services".

"Easy Access to the Offering": We define easy access to the offering as the accessibility of the goods and services through electronic business. More precisely, an easily accessible offering is offered through multiple channels (such as the Internet or mobile devices) and is widely spread geographically. Previous research has used availability [11], maximized access [18], accessibility [30], and extent of use [29] as factors that influence the success of Internet commerce or electronic business.

"Quality of the Offering": Clearly, the quality of the business unit's offering is an important factor in the success of the business unit's electronic business activities. Earlier success-related studies present similar success factors: quality [10, 12, 19, 29] and product quality [17, 18, 30, 33].

"Economic Pricing": Price is a relevant part of an offering prescribing the amount of money transferred between various parties in the value chain. Saarinen [29] discusses the relation between price and performance, whereas Weill and Vitale [32] define pricing management as one of the relevant factors to follow in the business model context.

"Easy to Use": Especially in the electronic business context, ease of use has emerged as a factor that influences the success of Internet commerce. Other studies have included the easy-to-use factor [18, 29, 30, 32] while several other similar factors have been taken into account such as user friendliness [29], clarity [29], fast and efficient service [32] as well as usability [11].

"Life Cycle Management": According to the product life cycle model, there should be a different kind of strategy [7, 21] and operative management focus [15] for each of the phases in the product life cycle in order to gain an optimized profit exploitation [25]. In the IS context, Saarinen [29] studies the effect of development phases.

"Customer Feedback Utilization": The efficient use of customer responses is crucial to improving the market offering to customers. Efficient customer feedback utilization

enhances the business unit's understanding of its customers. Weill and Vitale [32] have used customer needs data capturing as a measurement factor.

"Targeted Services": The two primary sources of competitive advantage are product differentiation and cost leadership [26]. Companies can differentiate their offerings to the customers by increasing the level of personalization. In studying the impact of targeted services, DeLone and McLean [11] define personalization as a part of their model in evaluating success.

"Simple and Clear Features": Especially in the case of electronic commerce, the offering component should include features that are simple and clear to use. This is essential in marketing and selling the offering through an electronic means. Torkzadeh and Dhillon [30] use the factor "shopping convenience" with similar purposes.

"Wide Range of Goods and Services": The last component in the set of success factors related to the business unit's market offering discusses the wideness of range of an offering. Similarly, in previous research, Keeney [18] and Torkzadeh and Dhillon [30] have included the large range of product options as a factor influencing the success of Internet commerce.

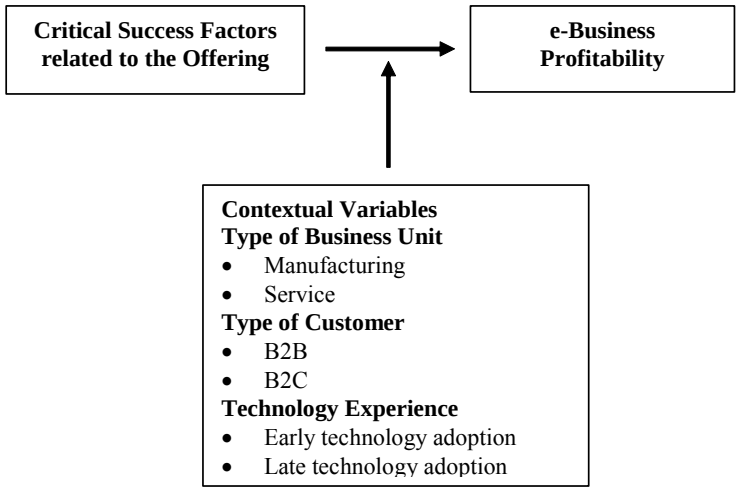

Figure 1. Conceptual framework of the study.

Electronic business profitability

The concept of success has been studied in a wide range of academic literature. According to the Webster dictionary, success is defined as a favorable outcome. In discussing success, management researchers have studied the business economic performance [12], the measurement of business economic performance [12, 33, 34] and the measures of information technology value [14]. In all these studies, authors regard profitability as a relevant component to explain the degree of success.

In our research, we use electronic business profitability to evaluate the success of the business units studied. In the questionnaire all the respondents evaluated the profitability of their business unit by giving a Likert-value in the scale of 1 (poor profitability) - 7 (excellent profitability).

Contextual variables

Type of business unit (manufacturing vs. service): To distinguish services from goods, the traditional services marketing literature uses notions such as intangibility, heterogeneity, inseparability of production and consumption, and perishability [35]. Today, rather than relying on these characteristics, services are viewed as the *"application of specialized competences (knowledge and skills) through deeds, processes, and performances for the benefit of another entity or the entity itself"* [31]. In our study, we use this discussion on goods and services to make the distinction between manufacturing-units and service-units. More specifically, if the business unit's output consists primarily of processes, instead of tangible goods, it is defined as a service-unit. We argue that manufacturing-units and service-units differ in their perception regarding their market offering success factors. Our objective is to examine these differences.

Type of customer (B2B vs. B2C): Similarly, a distinction is made between business units operating in the business-to-business and the business-to-consumer context. Compared to the B2C environment, the characteristics of B2B markets include, for example, a

relatively small number of customers, long-term business relationships, and a high degree of interaction between members of the supplier and the customer company [16]. The information for this variable was gathered directly from the survey data. We argue that the type of customer (either business or consumer) affects the success factors of a business unit.

Technology experience (early adoption vs. late adoption): The third contextual variable distinguishes early adopters of information technology from late adopters. Lieberman and Montgomery [22] consider the advantages and disadvantages of first-movers. They conclude that mechanisms that promote first-mover advantages include proprietary learning effects, patents, preemption of input factors and locations, and development of buyer switching costs. First-mover disadvantages may result from free-rider problems, delayed resolution of uncertainty, shifts in technology or customer needs, and various types of organizational inertia. To get data on the maturity of the technology adoption of the business units, we included questions in the survey asking to specify the year of the launch of the EDI-based and the Internet-based solutions. Based on these answers, the business units were classified into early adopters and late adopters of technology. We argue that the business units that are early adopters of technology have different success factors than the late adopters.

Operationalization of the constructs

The constructs used in this study are operationalized in the following table (Table 1). S/R informs the data collection method. Survey (S) means that the data were gathered from the survey questionnaire. Researcher (R) indicates that the data were produced by the researchers.

Table 1. Operationalization of the constructs.

Construct	S/R	Description and scaling	References
Success factors			
"Easy access of offering"	S	"Our offering is easily accessible through electronic business and geographically widely spread". Question asked on LIKERT 1-7 scale	[11, 18, 29, 30]
"Quality of offering"	S	"The quality of our offering through electronic business is good" Question asked on LIKERT 1-7 scale	[10, 12, 17-19, 29, 30, 33]
"Economic pricing"	S	"We set the price for our offering at a profit" LIKERT 1-7 scale	[29, 32]
"Easy to use"	S	"Our electronic business processes and products are easy to use" Question asked on LIKERT 1-7 scale	[11, 18, 29, 30, 32]
"Life cycle management"	S	"We manage well our electronic business product portfolio in each of the life cycle stages" Question asked on LIKERT 1-7 scale	[7, 15, 21, 25, 29]
"Customer feedback utilization"	S	"We improve our e-business offering based on the feedback we receive from our customers" Question asked on LIKERT 1-7 scale	[32]
"Targeted services"	S	"We have a personalized e-business offering based on customer desires" Question asked on LIKERT 1-7 scale	[11]
"Simple and clear features"	S	"Our offering has simple and clear features" Question asked on LIKERT 1-7 scale	[30]
"Wide range of goods/services"	S	"We have a large range of e-business products and services" Question asked on LIKERT 1-7 scale	[18, 30]
Electronic business profitability	S	"Estimation of electronic business profitability" Question asked on LIKERT 1-7 scale	[27]
Type of business unit (manufacturing-vs. service-unit)	R	If the business unit's output consists primarily of processes, instead of tangible goods, it is defined as a service-unit. Dichotomy of manufacturing-unit vs. service-unit.	[16, 31]
Type of customer (B2B/B2C)	S	"What types of customers do you primarily serve? B2B or B2C?"	[16]
Technology experience	S	"What is the year of launch of your unit's Internet-based solutions?" "What is the year of launch of your unit's EDI-based solutions?"	
S/R: S = Survey data, R = Researcher interpretation			

Methodology

We developed the framework using various sources such as a literature review, expert interviews, the pilot testing of the questionnaire, and the subsequent survey. We began the empirical study with qualitative research methods by interviewing 17 employees from five companies in the fall of 2003. These companies represent different industries: paper, media, traveling, telecom, and logistics. The main purpose of these interviews

was to identify critical success factors affecting the offering component of electronic business models. At the same time, a literature review was conducted analyzing previous success factor studies from the academic journal articles.

After the interviews and literature review, the number of the items on the initial success factor list was reduced by a careful analysis. As a result, we had a list of success factors that we decided to include as variables in the survey. The list of success factors was presented so that the respondents could evaluate the importance of each factor on a scale from 1 (not important) to 7 (extremely important). Common questions related to demographic data of the respondents as well as their companies were included. The questionnaire was pilot-tested with ten experts representing both practitioners and academics. After final revisions, the questionnaires were sent to the 450 respondents by mail.

Data Collection and Sample

The respondents were chosen from Finnish international companies using two criteria: 1) the company is among the top 30 Finnish companies according to their revenue and/or 2) the company is listed among the top 100 on-line brands in Finland. This produced a list of 61 companies from various industries including traditional large companies as well as some of the most successful small electronic commerce and portal companies. We chose a sample of 450 people, and they received the questionnaire by mail. All the respondents were practitioners both on managerial and operational levels of an organization, and they all were working at electronic business issues. The total number of responses amounted to 111 out of the 450 initial questionnaires, which yields a 25-percent response rate. We received properly filled questionnaires from 60 companies including 111 business units. Even though we had many respondents from the same firm, they were originated from different business units. Thus, our unit of analysis is a business unit.

Demographics

From these 111 responses, 63 percent represent service unit whereas 37-percent manufacturing units (see Table 2). Respondents worked primarily (46%) on the managerial level of the organization, or as directors (29%). Forty-five percent of the respondents had five to nine years of valid electronic business experience, while 23 percent had as much as ten years or more of electronic business experience. These respondents were typically from the companies that have utilized EDI in their operations since the 1980s.

Most companies in the sample had a long tradition of using EDI in their business operations. In many traditional manufacturing companies, EDI is still seen as a crucial component of electronic business. Eighty percent of the companies had started using EDI before 1993 and the Internet was used by 95 percent of the companies.

Table 2. Company sample (111 business units).

GENDER	%
Male	73
Female	27
POSITION OF RESPONDENTS	%
Manager	46
Director	30
Top management	10
Specialist, consultant	8
Employee	6
E-BUSINESS EXPERIENCE	%
Over 30 years	2
20-29 years	5
10-19 years	16
5-9 years	46
0-4 years	31
INDUSTRY	%
Service units, total	*63*
Logistics	14
Finance	10
Telecommunication	10
Media	8
Energy	6
Insurance	3
Retailing	3
Wholesale	3
Electronic	2
Construction	1
Others	3
Manufacturing units, total	*37*
Pulp and paper	12
Metal	10
Conglomerate	5
Electronic	4
Chemical	4
Groceries	2

Instrument validation

Any statistical analysis, for example the hypothesis testing, is irrelevant if the data are collected with measures that have not been proven to provide reliable and valid data and results [24]. In this study, we use widely adopted psychometric approaches to develop multi-item measures. This method is recommended by Churchill [6] in order to avoid the most common measurement difficulties. A psychological construct can be seen as

the abstract of a theoretical variable explaining some phenomenon which is of interest to academics and practitioners. Our instrument validation consists of four parts: reliability, content validity, predictive validity, and construct validity testing.

Reliability

Reliability is the degree of internal consistency of the measure answering the questions of how well a measuring instrument measures the intended constructs and whether the measure provides the same results every time it is used. Typically, the internal consistency is performed using Cronbach's alpha. The 9-item measurement instrument including the independent variables of the offering component achieved a reliability of .81. The coefficient can be regarded as sufficient according to Nunnally [24].

Content validity

An instrument has content validity if the sample of items in its construct is representative of all the relevant items that might have been used in the larger domain of knowledge and skills. Moreover, the instrument should include constructs or items that have been previously tested, emphasize related and relevant material, and require appropriate skills of expertise. In short, content validity gives an answer to the question of whether the items on the scale adequately sample the domain of interest. In our study, the content validity was confirmed by employing experts in the field familiar with the content of the multi-item instrument [8]. First, a careful literature review relating to the success factors yielded appropriate items for the instrument. Second, the interviews among five companies completed the list of independent variables related to the business model component of the offering. Finally, we used a control group of ten experts representing both academics and practitioners to provide feedback by pre-testing the questionnaire. These three steps certainly improved the content validity, but were still inadequate. However, the instrument validation in terms of content validity was continued by analyzing Pearson correlations. Table 3 shows that the item-to-profitability correlations ranged from .03 to .35, which produced a significance level

between .00 and .39. Thus, the results strengthen content validity in the instrument validation.

Table 3. Correlations between items.

VARIABLES OF THE OFFERING COMPONENT	N	Mean	Standard deviation	Corrected item-to- total correlation	Item-to-profitability correlation
"Easy access of offering"	108	5.61	1.20	.58***	.35***
"Quality of offering"	108	5.98	.88	.67***	.29***
"Economic pricing"	108	5.34	1.09	.55***	.22**
"Easy to use"	108	6.14	.90	.44***	.03
"Life cycle management"	108	4.90	1.45	.53***	.18**
"Customer feedback utilization"	108	5.86	.98	.45***	.22**
"Targeted services"	108	5.63	1.05	.51***	.22**
"Simple and clear features"	108	5.99	.90	.51***	.15*
"Wide range of goods/services"	108	4.65	1.49	.40***	.28***
Total	9	5.57	-	-	.34***

Legend:
Profitability = Perceived Electronic Business Profitability
Significance levels:
*** $p = <.01$, ** $p = <.05$, * $p = <.10$

Predictive validity

In psychometrics, predictive validity can be seen as the predictive power of a scale over the unobservable construct that it is intended to measure. High correlations refer to adequate predictive validity when new scales are redundant measuring the same information. In our study, correlation between the scale of the offering component and the item-to-profitability reached .34 with the significance level of .01 (Table 3).

Construct validity

Construct validity is concerned with the relationship of the measure to the underlying attributes it is expected to assess. We chose the two most common techniques to confirm the construct validity: correlations and principal component analysis. Corrected item-to-total correlation refers to the correlation between the score on the item and the

sum of the scores on all other (i.e. eight items) items varying between .40 and .67 and they all exceed the significance level of .01. The analysis of the construct validity was continued with principal component analysis and varimax rotation. First, we ensured the usability of factoring with Kaiser-Meyer-Olkin measure of sampling adequacy resulting in .758 and the Barlett's test of spherity giving the significance level of .000. The results indicated that a principal component analysis may be useful with the collected data. The principal component analysis resulted in loadings on four factors that generated an appropriate cumulated variance (76.34%) that alone is sufficient for retaining most of the information in the original variables. All the loadings are listed below in Table 4.

Table 4. Principal component analysis.

VARIABLES OF THE OFFERING COMPONENT	Components			
	QUAL	CUST	EASY	WIDE
"Easy access of offering"	.631	-.007	.276	.426
"Quality of offering"	.719	.160	.351	.159
"Economic pricing"	.624	.115	.253	.208
"Easy to use"	.436	.008	.778	-.181
"Life cycle management"	.847	.287	-.109	-.019
"Customer feedback utilization"	.186	.887	.089	-.016
"Targeted services"	.153	.862	.156	.170
"Simple and clear features"	.033	.364	.767	.326
"Wide range of goods/services"	.212	.113	.023	.915
Eigenvalue	3.728	1.268	0.976	0.898
Percent of variance explained	41.4%	14.1%	10.8%	10.0%
Extraction Method: Principal Component Analysis, Rotation Method: Varimax with Kaiser Normalization.				

In reviewing the results, we find four components. *Quality* (QUAL) component is formed from "easy access of offering", "quality of offering", "economic pricing" and "life cycle management". *Customization* (CUST) items "targeted service" and "customer feedback utilization" were separated onto the second component. "Easy to use" and "simple and clear features" form the third component named *ease of use* (EASY). "Wide range of goods/services" is extracted as its own component *wideness of product/service offering* (WIDE).

Findings

In this section, we use these four principal components to explain the electronic business profitability of a business unit. We apply a linear regression model for this purpose. As contextual independent variables, we use dichotomous variables: *type of business unit, type of customer* and *technology experience* (see Figure 2).

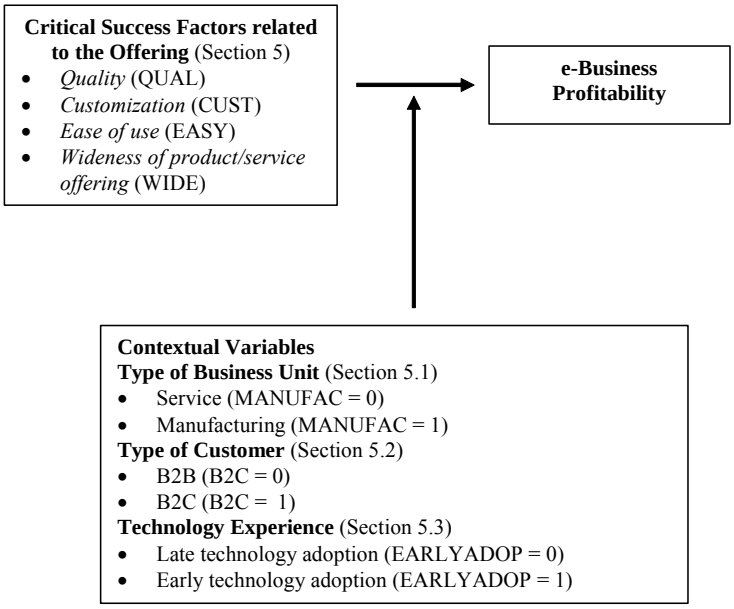

Figure 2. Regression testing.

Initially, we run a linear regression model with electronic business profitability as the dependent variable and the four principal components as the independent variables. The multiple determination is $R^2 = .153$ (n = 104) which is significant at even risk level 1%. The detailed results are in Table 5.

Table 5. The linear regression model using the principal components.

	Regression Coefficients			
	b	Std. Error	*t*	Sig.
(Constant)	4.654	.100	46.530	.000
QUAL	.258	.105	2.456	.016
CUST	.165	.104	1.582	.117
EASY	.024	.099	.243	.808
WIDE	.289	.099	2.925	.004

The principal components are uncorrelated in the whole data set (n = 108), and thus they are also nearly uncorrelated in the subset, where n = 104 (the dependent variable has a missing value in four cases). Thus, we may conclude that the variables *customization* (CUST) and *ease of use* (EASY) can be omitted from the model in the case where there are no contextual variables (risk level 5%).

In addition, we assume that the contextual variables, type of business unit (MANUFAC), type of customer (B2C), and technology experience (EARLYADOP), provide us with a deeper understanding of the effect of the success factors on electronic business profitability. Next, we will analyze the effect of each contextual variable one at a time. In each case, we use the same model type for all contextual variables:

$$y = \beta_0 + \beta_1 * I + \beta_2 * QUAL + \beta_3 * CUST + \beta_4 * EASY + \beta_5 * WIDE + \beta_6 * I * QUAL + \beta_7 * I * CUST + \beta_8 * I * EASY + \beta_9 * I * WIDE + \varepsilon, \quad (5.1)$$

where I is a symbol for contextual variables: MANUFAC, B2C and EARLYADOP.

Hence the model for the units with $I = 0$ is as follows:

$$y = \beta_0 + \beta_2 * QUAL + \beta_3 * CUST + \beta_4 * EASY + \beta_5 * WIDE + \varepsilon, \quad (5.2)$$

and for the units with $I = 1$ is

$$y = (\beta_0 + \beta_1) + (\beta_2 + \beta_6)*\text{QUAL} + (\beta_3 + \beta_7)*CUST + (\beta_4 + \beta_8)*EASY + (\beta_5 + \beta_9)*WIDE + \varepsilon \quad (5.3)$$

We will investigate the hypotheses of the type:

H_0: $\beta_i = 0$ for $i \in \{1, 2, \dots, 9\}$ and $\beta_i + \beta_{i+4} = 0$ for $i \in \{2, \dots, 5\}$.

It means that we are interested to find out if there are any differences in intercept or in the regression coefficients of the principal components in the groups of the contextual variables.

Type of business unit

We study the model (5.1), when type of business unit (MANUFAC) is a contextual variable. When we run the model, we obtain the multiple determination R^2 = 29.982/121.54 = 0.247 which implies that the regression relation is significant at risk level 1% (n = 104). The regression coefficients of the full model (5.1) are given in Table 6.

Table 6. The initial model for the effect of the type of business unit.

	Regression Coefficients		*t*	Sig.
	b	Std. Error		
(Constant)	4.730	.125	37.939	.000
MANUFAC	-.244	.214	-1.137	.258
QUAL	.366	.151	2.414	.018
CUST	-.133	.141	-.945	.347
EASY	.069	.124	.555	.580
WIDE	.294	.127	2.321	.022
MANUFAC*QUAL	-.142	.210	-.674	.502
MANUFAC*CUST	.653	.213	3.062	.003
MANUFAC*EASY	.023	.214	.106	.916
MANUFAC*WIDE	-.140	.201	-.698	.487

We conclude H_1: $\beta_i \neq 0$, i = 2, 5, 7, one at the time (risk level 5%). We study whether it is sufficient to use the model, where only variables QUAL, WIDE, and MANUFAC*CUST are in the model, i.e. we formulate the following hypotheses:

H_0: $\beta_i = 0$ for all i = 1, 3, 4, 6, 8, 9
H_1: at least one $\beta_i \neq 0$, i = 1, 3, 4, 6, 8, 9

To test the hypotheses, we use the F-test:

$$F^* = \frac{\frac{(SSE_R - SSE_F)}{(df_R - df_F)}}{\frac{SSE_F}{df_F}},$$

where SSE_F = 91.556 refers to the error sum of squares of the full model (5.1), and SSE_R = 95.039 refers to the error sum of squares of the restricted model, where only QUAL, WIDE, and MANUFAC*CUST are in the model as independent variables. The degrees of freedom associated with the sums of squares are df_F = 104 - 10 = 94 and df_R = 104 - 4 =100, respectively. Because F* = [(95.039 – 91.556)/(100-94)]/(91.556/94) = .596 < F(0.95, 6, 94) = 3.34, we conclude H_0. It means that we can accept as the final model the one where QUAL, WIDE, and MANUFAC*CUST are the only independent variables.

The multiple determination of the final model is R^2 = 0.218, and the regression coefficients are given in Table 7.

Table 7. The final model of the effect of the type of business unit.

	Regression Coefficients		*t*	Sig.
	b	Std. Error		
(Constant)	4.663	.096	48.738	.000
QUAL	.293	.101	2.912	.004
WIDE	.264	.095	2.784	.006
MANUFAC*CUST	.500	.150	3.335	.001

All regression coefficients are significant even at risk level 1%. Thus our estimated regression lines for manufacturing and service are as follows:

for manufacturing:

$$y = 4.66 + .293*QUAL + .264*WIDE + .500*CUST, \quad (5.4)$$

and for service:

$$y = 4.66 +. 293*QUAL + .264*WIDE \quad (5.5)$$

The model tells that the principal components *quality* and *wideness of product/service offering* are relevant in the model for manufacturing and service firms, and *customization* is also relevant for the manufacturing firms. We discuss these results in greater detail in the discussion section.

Type of customer

Next, we analyze the effect of the type of a customer (B2C). We obtain the multiple determination $R^2 = 29.947/121.54 = 0.246$, which implies that the regression relation is significant (at risk level 1%) (n = 104). The regression coefficients of the full model (5.1) are given in Table 8.

Table 8. The initial model for the effect of the type of customer.

	Regression Coefficients		*t*	Sig.
	b	Std. Error		
(Constant)	4.530	.122	36.989	.000
B2C	.260	.237	1.097	.275
QUAL	.124	.117	1.060	.292
CUST	.294	.119	2.477	.015
EASY	-.040	.125	-.319	.750
WIDE	.299	.126	2.377	.019
B2C*QUAL	.556	.257	2.158	.033
B2C*CUST	-.436	.227	-1.921	.058
B2C*EASY	.181	.205	.884	.379
B2C*WIDE	-.120	.214	-.558	.578

The model proposes the use of variables CUST, WIDE, B2C*QUAL, and B2C*CUST. Variable QUAL does not seem to be an important independent variable for the both groups. However, we would like to test if we could use the general structure, where QUAL and WIDE is important for the both groups, and CUST is important only for one of those groups. Thus, we study the use of variables QUAL, CUST, WIDE and B2C*CUST in the model. Because it is not plausible that the regression coefficient of B2C*CUST is negative, we assume that $\beta_2 + \beta_6 = 0$. Thus our null hypothesis is:

H_0: $\beta_i = 0$, $i = 1, 3, 4, 6, 8, 9$, and $\beta_3 + \beta_7 = 0$
H_1: at least one $\beta_i \neq 0$, $i = 1, 3, 4, 6, 8, 9$

According to our hypothesis, we construct the restricted model, where independent variables are QUAL, WIDE, (1-B2C)*CUST. To test the hypothesis, we compute F* = [(100.042 – 91.592)/(100-94)]/(91.592/94) = 1.445 < F(0.95, 6, 94) = 2.20, when lead to conclusion H_0.

The multiple determination is R^2 = .177, and the regression coefficients of the final model are in Table 9.

Table 9. The final model of the effect of the type of customer.

	Regression Coefficients		*t*	Sig.
	b	Std. Error		
(Constant)	4.649	.098	47.394	.000
QUAL	.257	.103	2.493	.014
WIDE	.295	.097	3.039	.003
(1-B2C)*CUST	.284	.120	2.359	.020

All regression coefficients are significant at risk level 5%. Our estimated regression lines for the both types of customers (B2C and B2B) are as follows:

for B2C:

$$y = 4.65 + .257*QUAL + .295*WIDE, \quad (5.6)$$

and for B2B:

$$y = 4.65 + .257*QUAL + .295*WIDE + .284*CUST \quad (5.7)$$

In the both models, the electronic business profitability depends on the success factors *quality* and *wideness of product/service offering*. Instead, it is interesting to notice that for B2B-firms variable *customization* is relevant.

Technology experience

Finally, we analyze the effect of the technology adoption (EARLYADOP). The multiple determination $R^2 = 23.47/121.54 = 0.193$, which implies that the regression relation is significant (at risk level 1%) (n = 104). Initially, n was 95. We replaced the missing values by generating randomly 0/1 –variables by using the probabilities obtained from the original binomial distribution of EARLYADOP. The regression coefficients of the full model are given in Table 10.

Table 10. The initial model for the effect of the technology adoption.

	Regression Coefficients		*T*	Sig.
	b	Std. Error		
(Constant)	4.696	.153	30.777	.000
EARLYADOP	-.120	.205	-.585	.560
QUAL	.322	.176	1.833	.070
CUST	-.015	.157	-.098	.922
EASY	-.084	.187	-.446	.656
WIDE	.323	.165	1.960	.053
EARLYADOP*QUAL	-.088	.220	-.398	.691
EARLYADOP*CUST	.379	.214	1.770	.080
EARLYADOP*EASY	.204	.223	.913	.364
EARLYADOP*WIDE	-.025	.208	-.118	.906

In this model, none of the variables is a clear candidate. We will consider the model, where variables QUAL, WIDE, and EARLYADOP*CUST are relevant. The multiple determination for this model is $R^2 = 0.178$, which is significant (risk level 5%). When this model is tested against the full model (5.1), we obtain F* = [(99.892 –

98.069)/(100-94)]/(98.069/94) = 0.291 < F(0.95, 6, 94) = 3.34. The coefficients of the model are given in Table 11.

Table 11. The final model of the effect of the technology adoption.

	Regression Coefficients		*T*	Sig.
	b	Std. Error		
(Constant)	4.643	.098	47.330	.000
QUAL	.256	.103	2.485	.015
WIDE	.305	.097	3.144	.002
EARLYADOP*CUST	.336	.141	2.393	.019

Our final estimated lines for late technology adoption and early technology adoption is as follows:

for late technology adoption:

$$y = 4.64 + .256*QUAL + .305*\text{WIDE}, \quad (5.8)$$

and for early technology adoption:

$$y = 4.64 + .256*QUAL + .305*\text{WIDE} + .336*CUST. \quad (5.9)$$

The essential difference between the models is that the variable *customization* is also relevant for early technology adoption firms.

Discussion

The following table shows the primary results of our study.

Table 12. Primary results of constructs explaining electronic business profitability.

	Components			
	Quality QUAL	*Customization* CUST	*Ease of use* EASY	*Wideness of product/service offering* WIDE
General model	Positive effect	No positive effect	No positive effect	Positive effect
Contextual variable				
Type of business unit (manufacturing vs. service)	Positive effect for both manufacturing and service units	Positive effect for manufacturing units	No positive effect	Positive effect for both manufacturing and service units
Type of customer (B2B vs. B2C)	Positive effect for both B2B and B2C firms	Positive effect for B2B firms	No positive effect	Positive effect for both B2B and B2C firms
Technology experience (late vs. early adopters)	Positive effect for both early and late adopters	Positive effect for early technology adopters	No positive effect	Positive effect for both early and late adopters

Our results indicate that - overall - the *quality* of the market offering has a positive effect on the electronic business profitability of the business unit. This result was consistent through all the contextual variables. In other words, a business unit, which has a high quality product or a high quality service, can conduct electronic business with better profitability than units with low quality products and services. This is a rather intuitive result.

Customization has no significant explanatory power over the overall model. However, we found a strong positive effect on manufacturing units', B2B firms' and early adopters' electronic business profitability. According to our results, manufacturing units and B2B firms can derive higher electronic profitability by customizing their market offering to customer companies. Obviously, customizing the market offering incurs costs to companies. Making these investments and customizing the market offering to each customer makes sense in the B2B market. By customizing the market offering, the supplier does more for the customer and thereby allows the customer to off-load some

work. According to our results, this can be done in the B2B market at a profit. On the other hand, service units and B2C firms should be wary of too much customizing their market offering. We argue that in the B2C market, companies should leave the customization process to the consumer, giving her the necessary tools to customization. For example, Financial Times has given its customers a possibility to customize the personal web page in their internet portal. This requires a simple log-in procedure and the customers can do the customization by themselves. This finding is consistent with Anderson [2] where he examines pareto-efficient agreements between buyers and sellers and concludes that seeking Pareto-efficient agreements only make sense in markets where negotiation and customized agreements are possible (such as in B2B markets). Similarly, here, we posit that customizing each offering to individual customers on the B2C market may be too costly and thus customization mostly makes sense in the B2B market. In addition, we found that early adopters can use customization features more profitably than late adopters. The early adopters have experience in electronic business activities (experience in implementing electronic business; better knowledge of customer needs and wants) and can leverage this experience for better customization than the late adopters of technology.

According to our results, *ease of use* of the offering did not have explanatory power over the profitability construct. This is rather surprising because, in previous research, especially in the electronic business context, ease of use has emerged as a factor that influences the success of Internet commerce [18, 30, 32]. These previous studies used consumer data in determining the electronic business success factors, whereas we used empirical data from companies. This is reflected in our results. Clearly, consumers are more concerned about the usability issues, whereas companies providing these electronic business products and services prioritize quality and customization issues.

Wideness of product/service offering has a positive effect on electronic business profitability. Again, as with the quality component, this was consistent through all the contextual variables. Our results suggest that if a business unit wants to succeed, it needs to have a wide range of products and services to offer to the market. This finding is consistent with [30] who found that Internet product choice has a significantly

positive effect on Internet commerce success. They considered Internet product choice as a measure of means objective with items such as "I like broad choice of products" and "I like the ease of comparison shopping".

Conclusions

In this paper, we set out to examine the electronic business success factors related to a business unit's market offering. Also, we explored the differences between manufacturing-units and service-units, between B2B firms and B2C firms, and between late and early adopters of technology. In the first phase of our study, we constructed and validated a 9-item instrument consisting of market offering success factors. This was done based on expert interviews, literature review on success factors, pilot-testing of the questionnaire, and survey data. Using principal component analysis, we were able to present the information from these initial factors using four principal components. These components were named as *quality*, *customization*, *ease of use*, and *wideness of product/service offering*.

In the second phase of our study, we used these four components to explain the business unit's electronic business profitability. Overall, *quality* and *wideness of product/service offering* explain the electronic business profitability of a business unit. *Customization* has explanatory power in the case of manufacturing units, B2B firms and early adopters. We did not find that *ease of use* had explanatory power on electronic business profitability.

Limitations and possibilities for further research

Like most survey studies, this study is subject to limitations. First, the sample consisted only of Finnish firms operating in local and international markets. Hence, a larger sample with cross-cultural data could give a richer picture of the subject matter. This could lead to more generalizable results. Second, the sample size consisted of 60 firms and 111 respondents. Although we find the sample size adequate for this type of exploratory research, further research could collect data from a larger group of

companies. Third, when categorizing the business units into manufacturers and service-providers, the researchers had to make decisions regarding the borderline cases such as electricity providers and conglomerates such as Nokia. This problem was solved by taking the business unit as the unit of analysis. Therefore, the responses from companies such as Nokia and KONE were classified according to the offering of the business unit in question. Fourth, although we sent out an equal number of questionnaires to large companies (top 30 Finnish firms), the number of responses received from the companies varies. However, we believe that our findings may be generalized with certain care.

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