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Business Strategy Development Meets ICT Strategy

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Business Strategy Development Meets ICT Strategy

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Abstract

Business development is today more and more focused on co-operation and networking activities, but internal development activities are still continuing. In many cases, however, these development activities are not completed and something is missing in the form of end results. The main shortcoming in terms of the implementation and utilization of systems in use lies in support for business processes and information flows. On the other hand, business developers are creating more and more complicated ways of doing business, without paying due attention to the ICT point of view. There is evidently a large gap between business and technology development and knowledge about those activities. The ideas in this paper have been raised in previous action research projects in VTT Industrial Systems and this paper defines the main aspects of the gap between technology and business development and also what the main research and development topics will be to fill that gap in the near future.

Keywords: networking, strategy development, ICT strategy development

1 Introduction

Co-operation activities and networking are still hot topics in business and the economy, because of the requirement for effectiveness and competitiveness. Networking in the economy has faced many evolutions since the networking of companies and new structures in industry (e.g. Castells 1996), towards greater forms of co-operation, such as the partnership

(e.g. Rackham et al. 1996; Nooteboom 1999). Today networking has moved towards strategic enterprise networks (e.g. Jarillo 1993; McHugh et al. 1995; Hines et al. 2000). Co-operation between companies has one main similarity: the need for communication, and for information technologies and software support that communication (e.g. Freeman and Perez 1988; Castells 1996).

Information and communication technologies (ICT) have made possible new business models and even new business structures. Learning and innovation concepts and perspectives have also emerged in discussions on enterprise networks (Powell and Brantley 1992; Child and Faulkner 1998) and new business processes have arisen in enterprise networks through these concepts and methods (Nonaka and Takeuchi 1995; Dixon 1999). There are many opportunities for developing business through new processes, models and methods and, of course, with new ICT solutions (Hemilä, 2002). On the other hand, some problems could arise, when the business development lives its own life without taking care of real business needs and co-operation aspects. These kinds of problems are sometimes real in enterprises where business developers follow all the new waves and "trendy" business methods like, in many cases, Customer Relationship Management (CRM) and Business Intelligence (BI). Trendy business methods include real and effective ideas if they are developed and implemented correctly from an enterprise point of view, but in many cases new methods are not clearly structured. Other problems arise when developing new methods but neglecting ICT. Of course problems could rise if a company implements a new solution, for example a CRM system, without creating support processes and methods. The development and implementation of business and ICT should take place concurrently. This paper presents the challenges of business and ICT development if these activities are not carried out methodically and presents ideas why they should be handled as related activities.

This paper is the first published article towards, and will act as the basis for, a doctoral thesis to be done by the end of 2007. This paper is part of an ongoing research project CobTec (Collaborative Business Networks and Technology Platforms) at VTT Industrial Systems in Finland, and the project is aiming to produce 4-5 doctoral theses. The objective of the thesis is to find out how companies utilize all the opportunities provided by ICT in their businesses. The special target area of the thesis will be the industrial service business and how companies have different roles in value chains and different ICT needs. This paper, however, is the base document of the thesis project and presents ideas on a general level, without discussion specific to the industrial service business.

Chapter 2 below presents the research methodology of the study. Chapters 3 and 4 present the two main viewpoints of the study: the challenges in business strategy development, the enabling technologies and ICT strategies. Chapter 5 focuses on the notable gap between business and ICT development. Chapter 6 outlines the main research and development activities required to fill the gap presented in Chapter 5. Chapter 7 is a case study and an example of this kind of development activity. Chapter 8 contains the discussion and conclusions.

2 Research methodology

This study is based on research and development projects of VTT Industrial Systems. The development activities of individual companies in co-operation with VTT Industrial Systems and analyses of their findings and results form the basis for these ideas. This study has the following features: Firstly the research is performed as case studies, and the case studies are based on the tradition of action research (e.g. Argyris and Schön 1978; Gustavsen 1985;

Westbrook 1995). The second feature is a theoretical generalization, utilizing the case studies (e.g. Eisenhardt 1989; Yin 1989; Westbrook 1995). The experimental development is related to the development process through three main phases: analysis, experimentation plus follow-up and evaluation. This kind of approach has been adopted for this doctoral thesis study, beginning with this first published paper.

3 Business strategy development challenges

Companies are focusing their businesses on some specific area and today many functions are outsourced to co-operation partners. The core business is not always stable. Sometimes customer requirements change and suppliers, too, must change their business. There are many examples of organizations which have noticed shortcomings in some areas of competence and which have acquired these competencies through acquisitions or recruitment. A dynamic business environment requires changes in core competencies.

Core competence is one aspect of companies' business vision. This vision usually moves as customer requirements and the business environment moves. It depends on the business as to how far ahead the vision states are targeted. Companies should have a vision of the future which serves as the starting point of the business strategy process. After the business target, i.e. the vision state, companies should clarify what they are today. A company needs an analysis of its current state in order to form a clear understanding of the development activities needed. When a company has clarified the vision state and the present state, then it knows the gap in its business. The gap could lie, for example, in production technology, competencies or in know-how. Where the gap lies is always case specific. The development activities needed to fill the gap in business form the roadmap to achieve the vision state and the strategy defines these development activities. Figure 1 below presents an idea for

companies' development activities, where the vision state is the target of a company and research actions clarify needed development activities. Development actions are steps towards the vision state and it is through development that a company's capability in the market rises.

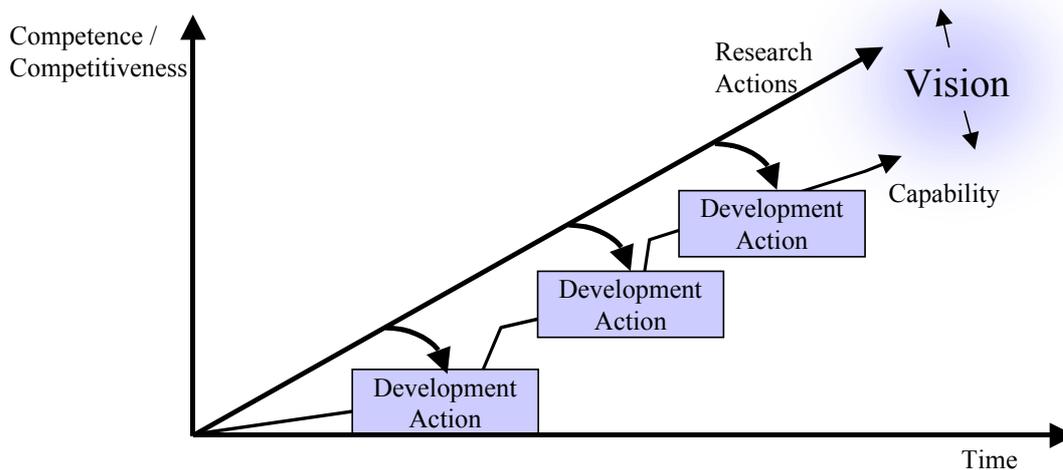


Figure 1. Company capability rises through development actions, and research shows the way to improving competence.

The strategy concept itself has been described in many ways. Strategy has its roots in the military and thereafter strategy it has come to mean a definition of goals and objectives (Anthony, 1965). Mintzberg (1987) has defined strategy with five "ps": as a plan (rules towards goal), a pattern (mode of behaviour), a position (safe place), a perspective (visions and targeting), and a ploy (beating the competitors). Generally, it could be said that strategy relates to corporate strategy, which guides a company as a whole. Porter (1998) has defined five driving forces in industrial competition: Suppliers, Substitutes, Potential Entrants, Buyers and Industry Competitors. Porter, furthermore, has defined three generic strategic approaches to outperforming other companies in industry (Porter, 1998):

1. Overall cost leadership
2. Differentiation

3. Focus

The many different views of strategy and its development could prove difficult for companies. After considering the different strategy schools presented by Mintzberg et al. (1998), one may realize the difficulty in choosing the right approach to developing competitive strategy for a company. Mintzberg et al. classified different strategy schools in three prescriptive schools and seven descriptive schools.

The challenges in business strategy development could arise in every phase of the development process. The starting point – the targeting and setting of the vision state – could prove very difficult for some companies. If the company has no clear idea what its role in value chain is, it will find it hard to clarify its business vision. The essence of formulating business strategy lies in relating a company to its environment (Porter, 1998). The competitive climate is other relevant aspect when the aim is to develop business strategy. The key point in business strategy development is to find one's own strengths and to focus on these (Porter, 1998). The identification of one's own strengths is the first step in analyzing one's present state. After a present state analysis, a company can clarify its business strategy by answering the question "What is the path and what actions are needed to reach the vision state from the position of starting development actions today?" Kaplan and Norton have said that the capability to enforce business strategy is a more important aspect than the strategy itself (Kaplan & Norton, 2000). Enforcing the strategy requires that all business units, support functions and employees act according to the strategy and are part of the strategy (Kaplan & Norton, 2000). The technologies, competition and legislation are changing rapidly, so the strategies should be changed also. Then there are new emerging business models which make business more and more competitive. It is not wise, however, to take all new waves seriously and implement them all in strategy and business. Consultants always bring new ideas and

provide their help in implementing new business models. Those models and methods are not good for every kind of business. It is challenging to find the right solutions for one's own business. Today ICT has a significant role in business, and businesses should be due attention to ICT at an early stage of every development activity.

4 Enabling technologies and ICT strategies

Technology innovations happen almost daily. Technology breakthroughs are speeding up new businesses and enable more effective ways of doing business. Information and communication technology (ICT) is seen to be an enabler but sometimes ICT is also an encumbrance (Hemilä 2002). The implementation of technologies is becoming multidisciplinary and the use of a knowledge base has rapidly increased. Systems interaction has become complex (Hemilä 2002). There are many definitions for ICT and Marchand et al. have defined ICT as the hardware, software, application programs, telecommunication networks and technical expertise that support information processing and communications activities at all levels of a company (Marchand et al. 2001).

ICT has had a big impact on product development. Products today are more and more intelligent and it is not a new idea to provide extended products, including tangible and intangible features. The potential sustainable growth of a business lies with services created on the back products (e.g. Hyötyläinen et al. 2002; Jansson et al. 2003; Kalliokoski et al. 2003). New emerging technologies like smart materials, micro-mechanical sensors and wireless and faster data transfer solutions etc. have presented new opportunities to develop product features, especially those intangible features of extended products and value-added services. The advance of technology has created new requirements also for business; the

companies should change their operational environments and change is needed for business models and operation models.

Technological development is not easy, especially for small- and medium-sized enterprises (SMEs). Technological development needs a lot of effort on the part of a company. It is not easy for the SMEs to utilize new emerging technologies, but it is not easy for bigger companies either. The main point as far as new technologies are concerned is to purposefully create a strategy for ICT in a company. ICT is basically employed at two levels in companies: in operations and products. Both levels are needed for competitive business and both levels need clear understanding of requirements and possibilities. But that is not enough: a company needs vision and a roadmap to advance in ICT development, just as vision and a roadmap are needed in business model development. Organizations, moreover, also need strategies to implement roadmap activities in order to achieve the vision state successfully. Turban et al. have listed the steps a company should execute in strategic ICT planning (Turban et al. 2002):

1. Set the IT mission
2. Assess the environment
3. Assess existing systems' availabilities and capabilities
4. Assess organizational objectives and strategies.
5. Set ICT objectives, strategies and policies
6. Assess the potential impacts of ICT

At an operations level there are many possible ICT solutions to utilize. Enterprise Resource Planning (ERP) is mostly known as a solution for managing information flows in production (Hemilä, 2002). ERP's are used for material management and resource management, but financial aspects can also be managed with ERP. ERP vendors have many different modules

and by tailoring these a company can obtain the it wants. CRM systems can manage customer relationships, and PDM (Product Data Management) can be used to manage product-related information. The main point is that ICT should fully support the business processes and the solutions in use should be strategic choices in companies.

In operations the ICT can be employed in many different activities. Marchand et al. have outlined one framework of IT practices in organizations (Marchand et al. 2001).

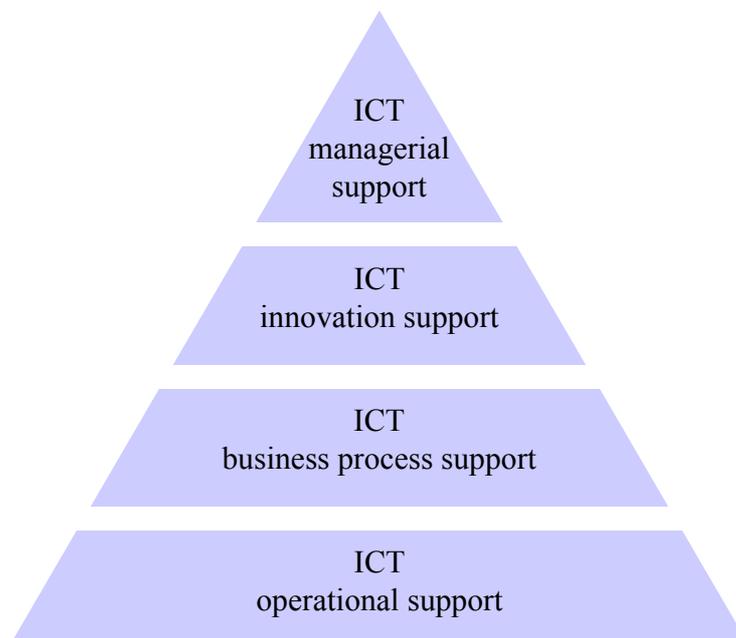


Figure 2. Framework of ICT practices in companies (Marchand et al. 2001).

At the highest level of Figure 2 are managers and executives, who make the strategic choices, analyze options and formulate business scenarios. All the decision are made at the highest level and the focus is on management control (Marchand et al. 2001). At the second level are professionals and technical workers, who act as R&D personnel, product designers, engineers and knowledge workers of the same kind. The common aspect for the second level is that these are normally middle management employees. The third level of the Marchand et al. model includes the process managers, the employees whose responsibilities include the co-

ordination of cross-functional or horizontal processes and communication with partners like suppliers and customers. The bottom level represents the operational knowledge workers and supervisors. These people are responsible for the direct operations of company and the processes through which products and services are provided and distributed. All these levels need different kinds of ICT and these levels have four types of ICT practices. According to Marchand et al., there are three roles or functions that ICT for operational support can play in companies (Marchand et al. 2001):

1. to increase scale efficiencies in the operational activities of manufacturing and service firms;
2. to process basic business transactions; and
3. to monitor and record the actions and performance of operational employees in carrying out their tasks.

But there is still something wrong in the way companies utilize ICT in business. The following chapter discusses about the gap between business and ICT strategies in companies.

5 The gap between the development of business and technology strategies

As explained above, companies have mostly two separate ways of developing their businesses: business development and ICT development. Both development activities are strategic choices and they also need strategic decisions. But before clarifying the gap between business and ICT strategies, the relationship between them should first be clarified. Ward and Griffiths (1996) have presented the relationships between business, information system and information technology strategies.

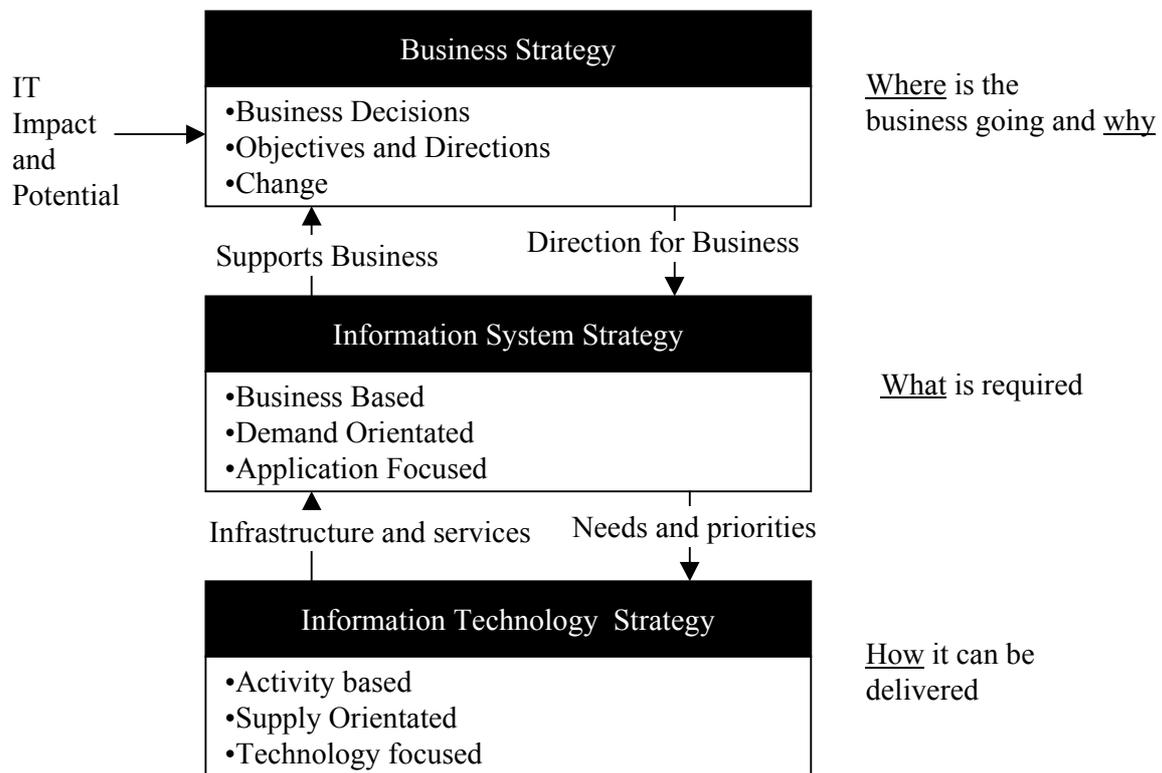


Figure 3. The relationship among business, IS and IT Strategies (Modified from source: Ward and Griffiths, 1996).

The relationship between strategies could be shown as by Ward and Griffiths or they can be linked in many ways (e.g. Parker et al. 1989; Henderson and Venkatraman 1993). Still as we have seen, there is evidently a gap between business and technology development. The companies have their business architecture, the basis for all business. Companies have their chosen business models and structures. This means that companies also need strategy management, which leads the company in the right direction. Companies chosen business models are dependent on their core business. Companies, furthermore, have individual structures, locations, types of organization and so on. The business architecture also includes networking and partnership aspects, i.e. how companies are networked and partnerships created with other companies. All these aspects should be a part of the business vision. The business vision clarifies future aspects, i.e. what the company will be like after few years. The business roadmap therefore clarifies the development path towards the vision state of vision.

We need business development activities to make our business more competitive and to fulfil the business vision aspects using the path indicated by the business roadmap.

The business architecture is one perspective, but we also have the ICT point of view, which provides the same kind of architecture. The base of the technology architecture has different kinds of enabling technologies and platforms. Companies can have different solutions in use, like ERP or CRM solutions, which are basic or legacy systems (Hemilä 2002). Then there can be some Supply Chain Management (SCM) solutions or Digital Control Systems (DCS) at the floor level, but also different kinds of mobile or remote technologies to support and extend the usage of legacy systems. Companies can have also different kinds of new business tools, for example Business Intelligence solutions to manage business data and information from marketing and customers. Markets are providing a huge number of different solutions to different needs, but there also is much overlapping in systems (Hemilä 2002).

The main idea in ICT utilization in business is that a company needs a technology vision as well as its business vision. Companies should clarify their data administration vision: which kind of solutions best fits best the company and what the best solutions for support business are. The present state is usually known, so a company needs to clarify the technology roadmap, i.e. the kind of investments needed to achieve the vision state of technology. After the creating a vision and a roadmap, the company should have a clear idea about the technology development actions required. These were the building blocks of technology architecture.

This paper has now clarified both the technology and business architectures and their development. These are the basic elements for competitive business and they should be

strategically managed and developed. But there is still a gap between these two strategic development activities. The gap is firstly evident in implementation. Companies do not have a clear idea of how to implement new business models or new enabling technologies. The gap could lie in research and development (R&D), so that companies manage business and ICT separately and the overall business benefits are lost. Companies do not have a common research framework to achieve success both in business and ICT research. One possible gap could be in knowledge and understanding. Companies do not have a clear understanding of business and technology possibilities and requirements. This occurs mostly in big companies with business developers and ICT developers working in own business units. There are few employees and specialists who clearly understand business and technology. Figure 4 below presents ideas on the gap between strategic business and technology development.

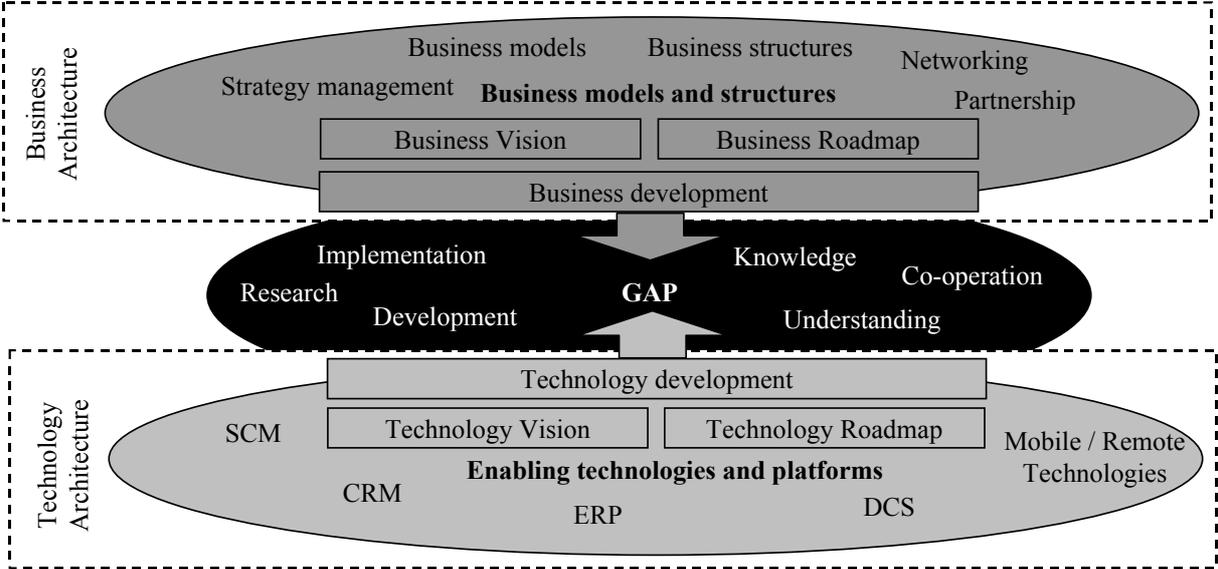


Figure 4. The framework of business and ICT development challenges.

These were examples of the gap between technology and business strategy development. Since the gap has been observed, there should be some answer to filling the gap and bringing the business strategy closer to the ICT strategy. The following chapter tries to explain some ideas to achieve success.

6 Research and development needed to achieve success and fill the gap between business and ICT strategy development

There have been many frameworks that have attempted to find the link between ICT strategy and business strategy (for example Parker et al. 1989; Henderson and Venkatraman 1989; 1993; Reich and Benbasat 1996; Chan et al. 1997). Parker et al. (1989) and Henderson and Venkatraman (1993) have presented the same kind of simple strategic alignment model, as presented in Figure 5. This clearly shows the links between ICT and Business strategies and the processes connected with them. On the other hand, several research studies have defined the link between ICT practices and improved organizational decision-making (e.g. Rockart and Bullen 1986).

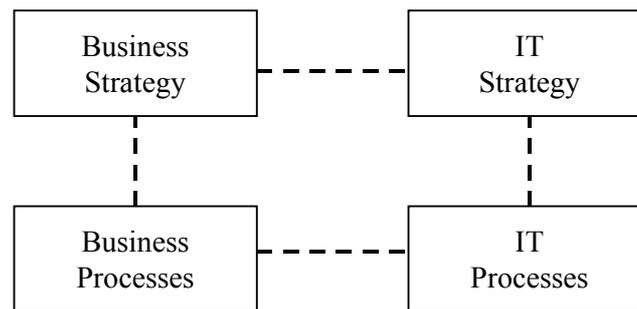


Figure 5. Strategic alignment model (Parker et al. 1989; Henderson and Venkatraman 1993).

The gap between strategic business development and the ICT strategy could be filled with focused development activities. The main elements in achieving success are common understanding and knowledge sharing. Both business developers and ICT developers should understand each other's areas of expertise. The common understanding should be at many levels within organizations, not only at management and executive levels but also in at development and realization levels. The strategy process requires knowledge and participation from many levels of organizations and also from different business units. Co-

operation between business and ICT departments of organizations is the one key to success. But co-operation may be hard to realize, if there are no common processes.

Organizations should make connections between business and ICT planning processes, and from there to operation levels. These processes should be clarified and that is one area for future research.

Another element in achieving success is implementation. ICT should be successfully implemented, but organizations should also implement the right solutions, the ones that best fit their own businesses. ICT and business operations have great potential for each other, if successfully implemented. Follow-up and evaluation of implementation is the answer to estimating the success of implementations. Any evaluation must also take further development needs into account.

A common understanding may be reached by study, using the framework presented in Figure 6 below. The idea is that the business strategy controls the whole business and companies should clarify own strategy. In companies there are business models in use and also technologies in use. Then there are processes to support both the business model and the technologies. The analysis of these building blocks of the business environment should create a common understanding for the future.

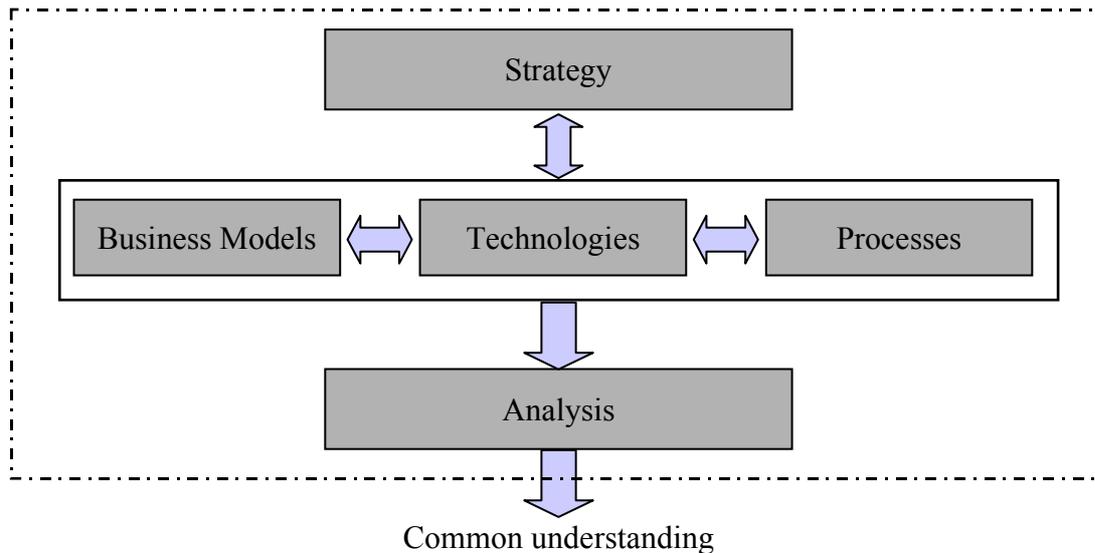


Figure 6. Common research and development framework for future.

The framework presented in Figure 6 will be used a doctoral thesis survey of companies. The idea is to get an overall view of the business environment of Finnish companies', the kind of ICT capability they have and also how they are evolving in business today and will evolve in future. Also, the main processes that make effective business should be identified.

7 Business case example of business and technology strategy development

VTT Industrial Systems has had many different development projects with different sized organizations where the main problem has been the utilization of new ICT solutions and thereby a new business model. Today, the networking of companies, integrated solutions, XML-based transactions between organizations are very familiar. Supporting the companies' strategy process is one main task in VTT's development projects. The companies, especially Finnish SMEs, need support for their process development and in focusing their businesses strategically. Both business and ICT development are VTT Industrial System's core competences.

One example of a development project in which development focused on both ICT and business was the InElog project (Hemilä, 2002) with a Finnish electronics contract manufacturer. The project's main target was to develop an e-logistics strategy for the company and to create business models to serve customers better by using ICT and also by providing different value-added services. InElog was one example of a development project where the aim was to achieve competitiveness through both ICT utilization and business development.

The business development project was an action research project in which VTT Industrial Systems made an analysis of the business and the environment. The analysis included customer and supplier interviews, which gave an understanding of co-operation partners' requirements for development activities. The external point of view is not enough, however. There is still a need to identify internal development requirements. The project included internal interviews with all important business units, and these units also participated in development activities in differentially focused development groups. The development groups focused on different activities that utilized ICT in making business more competitive. The development groups were as follows (Hemilä, 2002):

- extranet team to develop websites for external partners
- intranet team to develop websites for internal use
- customer relationship team to develop different new value-adding services for customers, according to customer requirements and own ideas
- quality team to ensure quality processes and data for sharing with partners
- production team to develop order and delivery processes and the ICT solutions connected on them

- strategy team to develop new methods for business to fulfil the needs and requirements of other development teams

The development teams succeeded in achieving a common understanding of all business units and the whole project was successfully executed. The main results of the project were an e-logistics concept for company, how to conduct business, how to utilize ICT and how to serve partners better.

8 Conclusions

Business development at the strategic level is not an easy task for companies, especially for SMEs. Business strategies change and companies should change their competencies in value chains. A strategy should clarify the methods and activities required of a changing business. The utilization of different ICT solutions requires understanding of the business environment and business requirements, and also of market opportunities. The other aspect is the understanding of ICT solution providers. There are many solutions on the market that sound great, but after implementing these solutions difficulties could arise. In many cases the solutions are not capable of doing the things the marketing people had claimed. Or there may be a need for expensive modifications to fit solutions to their intended use. Success could be achieved through focused development activities, starting with an analysis and continuing through development to implementation and evaluation.

This paper has presented the main ideas of a future doctoral thesis. The next phase is going to focus on research. The evolution of industrial service business is interesting topic, as Finnish companies are focusing on providing value-added services for their products. The concept of the extended product is not enough; companies are responding more to customers' processes

and value chains. There are evidently clear competencies and roles for companies which develop industrial services. The research will continue through interviews, the holding of thematic workshops and an analysis of the results, both in action research projects at VTT Industrial Systems but also in the doctoral thesis research.

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