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Value Centric Business Development for Estonian Manufacturing Small and Medium Sized Enterprises

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Declaration:
I hereby declare that this doctoral thesis, my original investigation and achievement, submitted for the doctoral degree at Tallinn University of Technology, has not been submitted for any other academic degree.

Merili Kukuškin .....

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MEHHANOTEHNIKA E94

Väärtuskeskne ettevõtte arendus Eesti väike- ja keskmise suurusega tootmisettevõtetele

MERILI KUKUŠKIN

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KIRJASTUS

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ABBREVIATIONS

AR	Action Research
CAC	Customer Activity Cycle
CCA	Case Company A
CSV	Creating Shared Value
ERP	Enterprise Resource Planning
G-D Logic	Goods Dominant Logic
GTM	Grounded Theory Method
P/SS	Product/Service Systems
QFD	Quality Function Deployment
RQ	Research Question
S-D Logic	Service-Dominant Logic
SME	Small- and Medium-sized Enterprise
SoM	Servitization of Manufacturing
TPS	Toyota Production System
VAC	Value Activity Cycle
VN	Value Network
VOC	Voice of the customer
VS	Value System

INTRODUCTION

We are living in a volatile world. The economic world is evolving quickly towards the direction, where [1]:

- The world is more **interlinked and transparent**
- Customers expect **solutions** to their problems. (This requires that companies deeply understand what each of their individual customer values are and how to serve them.)
- **Services** and intellectual human abilities gain an ever-increasing role in the economy
- Companies understand that in order to be successful, they need to also start addressing **environmental and social problems**

European manufacturing has great potential as part of a sustainable EU economy. However, its success will depend upon continuous innovation in products and processes, towards "innovating production", founded on knowledge and capital. "Industry 4.0" is a vision referring to the fourth industrial revolution by computerisation of the manufacturing industry (first was mechanisation of production, second introduced mass production, third brought digitalisation). These are the main strategies and visions aiming to support European manufacturing in the near future.

MANUFUTURE is a powerful vision (formulated in the beginning of the 21st century), aiming to form a complex network linking human and societal needs (demand) to both the industrial and educational systems (supply) [2]. The European Union has also founded a Factories of the Future (FoF) project for the years 2014-2020, to support developing high added value manufacturing technologies vision and outline routes, which will be clean, highly performing, environmental friendly and socially sustainable [3]. The priorities of FoF are:

- Adaptive and smart manufacturing systems
- Digital, virtual and resource-efficient factories
- Collaborative and mobile enterprises
- Human-centred manufacturing
- Customer-focused manufacturing

At a strategic level, the ***European Union*** has started a new movement in 2012 - the aim of Smart Specialisation is to determine those business areas for every region, where potential growth and created added value would be higher than average, and where there is an opportunity to achieve a competitive advantage through investments into research and development. The whole of the European Union needs to be effective and collaborate in order to be economically successful and competitive in the global sphere [4].

Estonia has also recognised that the world is in an era of great changes. Technology is being integrated into more areas in the industry as well as in

practical appliances. Automatisation enables one to do increasingly more work and more complicated work, which has traditionally been done by humans [1]. The economic crisis of 2008/2009 has accelerated this trend in Estonia as enterprises needed to become more effective; and technological development has been one of the means. Companies, that have skills and competences to do more complex tasks will become more successful, whereas those that are not developing smart entrepreneurship, will face challenges in the future [1, 5]. Under the influence of main megatrends and challenges (ageing, individualism, globalisation, urbanisation, sustainability, finance debt, public debt, emergence of technologies and knowledge), manufacturing sectors are undergoing structural changes. Globalisation and the continuous increase in competition make it necessary to implement new business models and production structures that are based on mutual interests and collaboration [1, 6–10, 11].

Estonia has taken various steps since the beginning of the 21st century, to be proactive and raise its competitiveness in the global sphere. Estonia has developed infrastructure and an economic environment at the Government level and established various foundations (Enterprise Estonia in 2002, Tallinn Science Park Tehnopol in 2003, Estonian Development Fund in 2007), that have played a major role in accelerating local enterprises of high potential [1].

Estonia has set three priority growth areas for 2014-2020, as stated in the Estonian entrepreneurship growth strategy 2014-2020, that have most growth potential:

1. Information and communications technology (ICT) horizontally through all sectors
2. Health technologies and services
3. More efficient use of resources

These are the priority development areas to which the Estonian Government will commit itself and support entrepreneurs to earn greater income through products and services with higher *value added*. In strategic growth and development documents, [1, 5, 12] some issues are also stated that need to be addressed while developing the priority growth areas. Main issues linked to efficient use of resources are stated below:

- **Strategic management and development capacity** among manufacturing enterprises shall be developed, by raising the awareness of entrepreneurs and by offering training and entrepreneurial knowledge
- **Management quality and efficiency** should be improved.
- **Co-operation between operators in export markets and manufacturers** should be improved as, considering the small volume of export, it is often essential for success. [5].

How can Estonian manufacturing SMEs raise their competitiveness in the global sphere? Raising *added value* has been one of the top suggestions in governmental and also business strategies since 2007 [5, 12]. Nevertheless, frameworks and methodologies to help companies fulfil those strategic goals are lacking. Modern Japanese Six Sigma [13] and Lean Manufacturing [14] concepts of today enable one to reduce waste, increase quality and fulfil customer needs. But how to offer solutions to customers that are in harmony with their lifestyles and contexts? How to do it in the most effective way? Lew Platt, chairman and CEO of Hewlett-Packard has said: "*Whatever made you successful in the past, won`t in the future*". It is widely recognised that manufacturing companies also need to change their product-centric view towards a more holistic view, because it helps them to be competitive, more effective and attractive [2, 6, 7, 9, 15–27]. One widely developed field dealing with these issues is the servitization of manufacturing.

The roots of the servitization of the manufacturing field reach back to the late 1970s, when Shostack and Levitt concluded that products and services are often inseparable, and selling a product may lead to a relationship where services can be sold over an extended period of time [28]. In the late 1980s Vandermerwe and Rada argued that there are three ways for manufacturing firms to benefit from servitization: to lock out competitors, to engage customers and to increase the level of differentiation. Also economic (increasing sales revenues) and environmental (increasing environmental performance) rationales are important [29]. In 2007 Baines et al. suggested that "*the innovation of a manufacturing organisation`s capabilities and processes to shift from selling products to selling an integrated product and service offering that delivers value in use*" is the process of servitization [28]. According to Neely`s research, service-led competitive manufacturing strategy is an area of growing interest for academia, business and even government [27]. Product-centric services, where the manufactured product is central to the provision of an integrated set of services, enabling one to move up the value chain, is of particular interest [28, 29]. Surprisingly, Neely`s research shows that servitization of a manufacturing company appears to be more difficult than might be expected - it is difficult to make incremental profits [29]. According to Neelys` research the most important capabilities for firms in order to face challenges are scanning the environment, predicting the future, adapting the organisation and knowing the risks [27].

In Estonia, the services sector's share of the economy has increased over time, accounting for about two-thirds of total gross sales revenue in 2011 [30]. For both the service and industrial sectors, value creation through services has become a basis for competition in the world. The reason for this is the changes in people's lifestyles - the role of individual approaches has

increased. In 2010 the service sector formed 64-68% of sales revenues in Estonia.

In this thesis it is proposed that there may be some major opportunities for Estonian manufacturing companies to apply new fundamental strategies, which have been tested and proven to be effective in successful companies throughout the world. It is our ambition to contribute to the shift towards *value centric* thinking by opening up some new perspectives for understanding the *value system* and noticing new product, service and business model development potential.

***The research problem to be addressed in this research is**:*

Estonian manufacturing companies are losing their competitiveness in the global and local sphere over time, and are moving towards becoming subcontractors rather than high value adding companies.

Research questions to be asked are:

1. What characterises a competitive company?
   1.1 How does an economic system function?
   1.2 How do successful companies function? What are their business models like?
   1.3 What characterises a competitive company?
2. How can Estonian manufacturing SMEs apply the characteristics of a successful company?
   2.1 Are there any existing strategies or methodologies?

The goal of the current research is: to develop value centric models for the competitive development of manufacturing SMEs.

Main objectives of the research are:

1. To conduct in-depth research on the concepts "*value*" and "*value system*" (what "*value*" is, how it can be used and converted into another form of value)
2. To propose a specification of a proactive value centric business;
3. To develop a method for analysing manufacturing enterprises and help them find ways to:
   - Raise efficiency (resources, management, marketing, logistics etc.),
   - Raise *added value* for the customer,
   - Increase co-operation between different parties within the *value system,*
   - Develop and update their business models;
4. To test the proactive value centric business development method.

Research outcomes need to be applicable in Estonian Small- and Medium sized Enterprises (SME) in the field of manufacturing.

The results of the doctoral thesis have been presented by the author at 9 international conferences and one peer-reviewed international journal. The author has published 10 international scientific papers, 7 of which are directly associated with the thesis.

Theoretical contribution of the thesis includes:

- **Developing further the scientific shift towards *value centric* thinking** by opening up some new perspectives for understanding the *value system* and noticing new forms of product, service and business model development potential (Chapters 1, 2 and 3);
- **Proposing a specification of a proactive value centric business,** by constructing a theory using the Grounded Theory Method and data from Descriptive Studies 1 and 2 (Chapter 4).
- **Constructing a business development method** for analysing manufacturing enterprises and synthesising new value centric business models (Chapter 5). The created method helps companies to find ways to:
  - Raise efficiency (resources, management, marketing, logistics etc.),
  - Raise *added value* for the customer,
  - Increase co-operation between different parties within the *value system*,
  - Develop and update their business models;

Method has been tested on 4 case companies and preliminary results have been presented in Chapter 5. Research outcomes seem to be applicable in Estonian Small- and Medium sized Enterprises (SME) in the field of manufacturing.

Practical contribution of this thesis includes creating and testing a value centric business development method that is easy to use and effective in analysing businesses current business strategy and synthesising new ways to make it more effective, competitive and value centric. The created value centric business development method consists of four stages:

1. Creating Value Activity Cycles
2. Filling in Value Analysing Matrix
3. Analysis of the effects of possible changes within the *value system*
4. Summarising results of the analysis and synthesising new ideas

Preliminary testing of this method on four case companies suggests that the method is easy and useful. Companies gained a better understanding of their clients and partners, and know how to create offers that are in harmony with their clients' and partners' values and processes. The method helped them to understand the "big picture" and discover development opportunities as well as potential risks. From a practical point of view, the method helped

companies to understand their development potential at a deeper level and know what steps to take next (Figure 1).

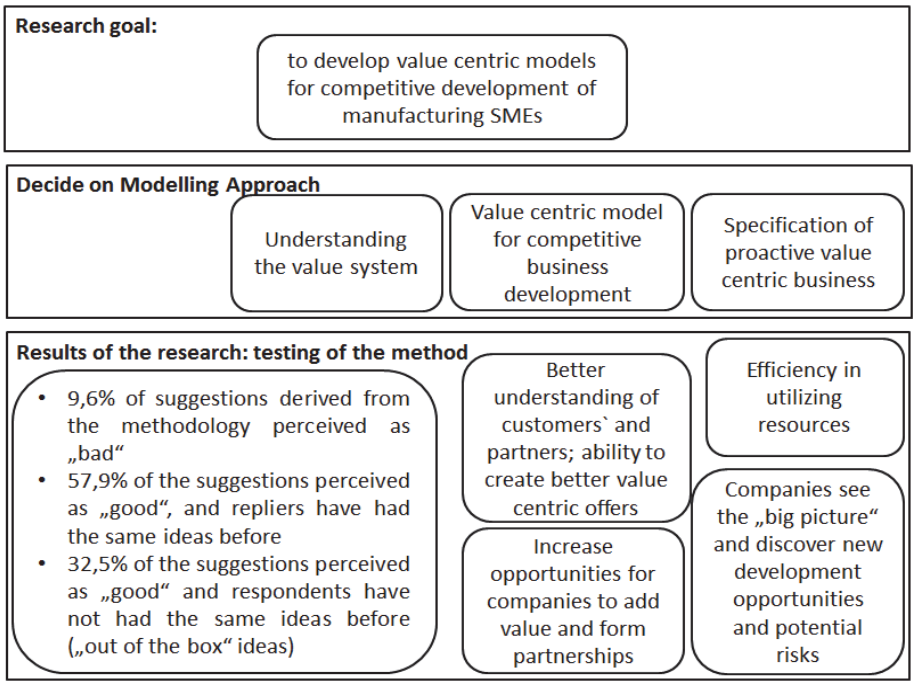

Figure 1: Research goal, what has been done, and results of the research

Novelty of the research includes: new approach to business development that gives possibilities to analyse current *value system* from different perspectives and synthesise new value centric models.

1. RESEARCH BACKGROUND

"If I had asked my customers what they wanted, they would have answered faster horses," Henry Ford.

1.1 Changes in economic landscape

In economic development, long-run structural changes among the four main sectors of an economy (primary, secondary, tertiary and quaternary) are based on changes in demand [21, 31]. A hierarchy of needs is associated with different saturation levels of the goods of the four main sectors. As income increases, the demand for primary sector goods (raw materials) is first saturated (the demand is met by offers), a further increase of income leads to demand saturation of secondary sector goods (finished products) [23, 31] (Figure 1.1.). According to French futurist Fourastiè (1949) [32], it is only the demand for goods in the tertiary and quaternary sectors (service and information) that will never be saturated (demand is greater than offers). People want more and better services (experience) when they can afford them, in order to save time which could be better spent on other activities and to obtain unique experiences [16, 31, 32].

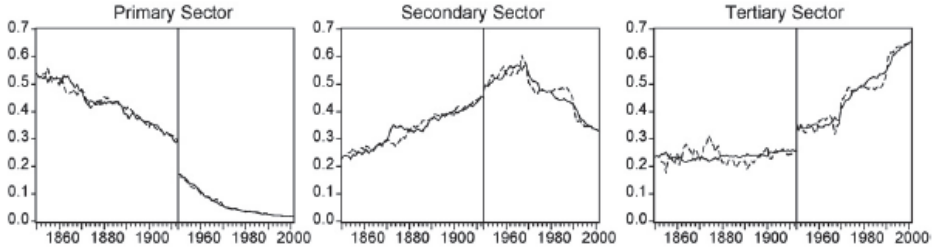

Figure 1.1: Value-added shares in different sectors of economy (figure from Dietrich, A. & Kruger, J. J. [31]*)*

According to Hospers [32], the human tragedy is that people always want more: once their material needs have been met (lower levels of the Maslow pyramid), they long for immaterial things such as culture, recreation and services to extend their free time and be in harmony with their values and lifestyles [16, 17, 33]. In order to create such services, one needs intellectual, social and communicative skills [9, 16]. In this way, technological development leads to mankind playing a steadily more central role: "The machine obliges man to specialise in the human"[31]. Technological progression may free mankind from material worries but they do not necessarily make people any happier [32, 34- 37]. Thus in order to move with this trend, there is now a need for companies to shift from a product- and

firm-centric view, to one which personalises consumer experiences [36] [16] [6, 9, 16, 19, 26, 36, 38, 39] (Figure 1.2).

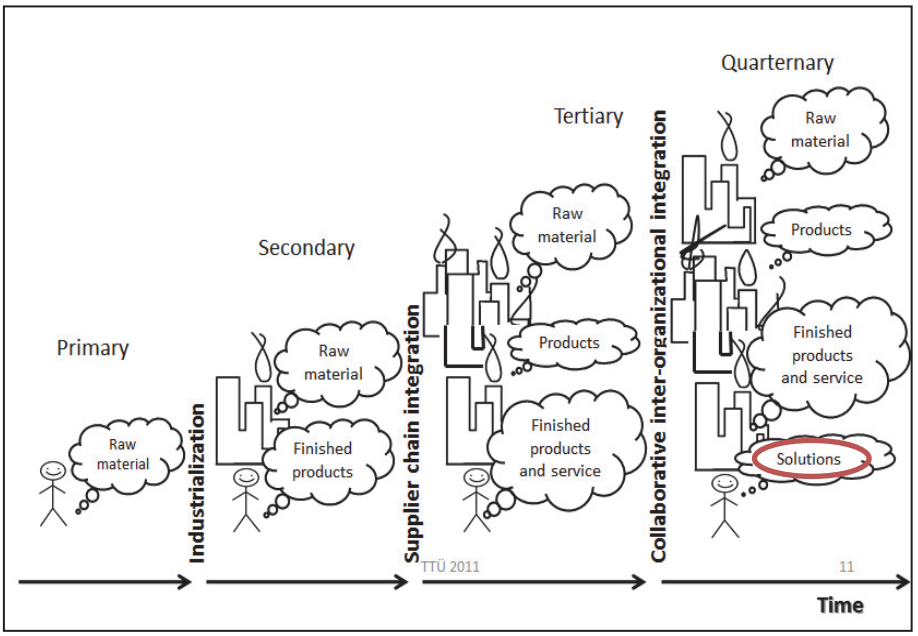

Figure 1.2: What makes customers happy in the four sectors of the economy (the saturation of needs)

The Industrial Revolution (18-19 century) marked a major turning point in human history, when almost every aspect of daily life was eventually influenced in some way. Most notably, average income and population began to exhibit unprecedented sustained growth (switch from primary to secondary sector of economy) [23, 31]. Manual labour and the draft-animal–based economy switched towards machine-based manufacturing, soon toward assembly line manufacturing, which enabled high-volume and quality products to be produced at lower cost. After supplier chain integration, companies were able to offer services around their products - different warranty programmes appeared and people could enjoy being taken care of (after-sales service, data management etc.). The final shift in the economic system has been collaborative inter-organisational integration, where companies were able to offer solutions to their clients'` problems. Different leasing and customer loyalty programmes emerged (American Express, airline alliances etc.) [10, 40– 42].

As there are very many actors in the economy and there is demand for ever improving solutions and experiences (customer values change), the economy and market are dynamic [31, 43, 44]. In modern industry, there are some strong directions of changes, such as globalisation and the expansion of

information technologies, that affect the way the economy and markets function [28, 29, 41]. The economy has become more transparent (the integration of national economies into the international global economy through trade, foreign direct investment, migration, the spread of technology, capital flows etc.) and customers smarter, more demanding and networked [23, 41]. Michael Etgar has elaborated on major changes in the social sphere [1]:

- social and cultural changes: more time is spent on entertainment, sports and education - social and psychological cost of free time increases,
- demographics: growth in the number of smaller families and single people - increased outsourcing of various home maintenance activities, growth in semi-prepared dishes,
- entry of women into the workforce: women`s time spent on household activities decreases - growth of telemarketing and internet based shopping,
- globalisation: integration of economies - Western-like patterns increase,
- technology: the internet - the cost of interaction between buyers and sellers decreases,
- recession: increase in the number of unemployed - market value of time for many consumers has decreased,
- cultural changes, New Age beliefs and behaviour - search for self-fulfilment e.g. bread baking; shopping combined with entertainment-purchasing has become less of a cost factor and more of a value-producing factor in itself,
- Increased efficiency of the consumer as a producer: increase in the general level of education in the market - more efficient consumption, consumers need less time for the in-house performance of various activities.
- Vargo, Lusch and Morgan also state that individuals have become increasingly micro specialised - there is an increasing need for specialised services [Vargo, Lusch and Morgan 2006].

It is due to these dynamic changes that new retailing formats develop and consumers want to change their mix of *value* providers. The social and psychological cost of time changes [16, 28, 29, 34, 45]. How consumers *value* different activities, products and services changes dynamically depending on customers` context and life-style [41, 46]. As customer demands saturate over time, enterprises constantly need to find ways to offer new delights for customers (Kano model). It has been suggested that in order to survive in developed economies, manufacturing companies need to move up the value stream and create more sophisticated products and services. In this way they do not have to compete on the basis of cost [27, 29].

Servitization of manufacturing is the process where a manufacturing organisation`s capabilities and processes shift from selling products to selling integrated product and service offerings that deliver value in use [28, 44]. According to Neely`s research, service-led competitive manufacturing

strategy is an area of growing interest for academia, business and even government [27]. Product-centric services, where the manufactured product is central to the provision of an integrated set of services, enabling one to move up the value chain, is of particular interest [28, 29]. Surprisingly, Neely`s research shows that servitization of a manufacturing company appears to be more difficult than might be expected - it is difficult to make incremental profits [29]. Recent research on the servitization of manufacturing has found that pure manufacturing companies have lower sales revenues and profits compared to servitized manufacturing companies [27, 29, 47]. Neely has presented four major factors that challenge the survival and success of manufacturing firms:

- scanning the environment (gathering information),
- predicting the future (using intuition),
- adapting the firm to changes (proactivity capability),
- knowing and evaluating risks and benefits.

Manufacturing companies could benefit from a method or a framework that would help to overcome those challenges in a practical way.

1.2 Changes in value perception

"*A customer is a rear-view mirror, not a guide to the future,"* George Colony, Forrester Research.

It is widely believed that the ratio between *created value* and cost (not only monetary cost) needs to be high to be competitive on global markets [48, 49]. However, recent findings show that people's choices in economic experiments often differ substantially from those that would maximise their immediate material payoffs. This has led to a rethinking of the postulates of human decision-making [34, 36]. The most well-known example of this phenomenon is Linux (open-source software, developed by programmers voluntarily). It is therefore essential that in order to provide the best, most competitive offerings, a company must invest a sufficient amount of time in understanding what it is their customers, partners and suppliers *value* and how to exploit it in the most reasonable way [41].

The definition of customers' *value* has been changing greatly since the formation of the current economic system and it keeps on changing [9, 16, 19, 25, 36, 38, 40, 50]. This, however, brings companies new challenges as well as opportunities to differentiate in the market, creating new, innovative *values* (new benefits and experiences) for the customers that in turn may give them an advantage over the competition [26, 51, 52]. Over the past several decades, an industrial economy has started to be transferred to a service economy [21, 22, 25, 27–29, 39, 53]. The service industry now accounts for 72-78% of economic activity in the US, Japan, Sweden and Switzerland [54], and numerous initiatives exist for transforming firms' orientation from goods

to service. This trend can be seen in both business-to-business (e.g. IBM, GE, Rolls Royce) and business-to-consumer enterprises (e.g. Lowe's, Kodak, Apple) and in some cases entire industries (e.g. Software - as-a-service) (Vargo & Lusch, 2008) [25]. The growth in services suggests that companies need to change their production and marketing strategies, which they have adopted for manufacturing goods, and adjust them for the distinguishing characteristics of services [9, 16, 19, 27–29, 38]. Vargo and Lusch have proposed a widely accepted fundamental shift to adapt to the changes: the shift from Goods-Dominant Logic (G-D Logic) to Service-Dominant Logic (S-D Logic) [16, 25], that has been developed further in concepts such as Product/Service Systems (P/SS)[28], Creating Shared Value (CSV) [6], Service Logic [38] etc.

The wishes of industrial customers have also changed [16]- industrial customers value how well *value propositions* are in harmony with their existing components, processes and strategies [41]. The expansion of collaborative technologies allows businesses to organise their *value creation* processes in new ways [14, 25, 55]. A process-centric view of business changes to a human-centric view of business, which means that people are seen as the active agents of business rather than processes [6, 8, 9, 16, 19, 38]. Verna Allee [42] is developing a new promising theory and methodology, Value Stream Mapping (VSM) for understanding the *value network* within and outside a business.

Recent business literature has shown how some of the world`s leading companies have changed their strategic focus and are now providing "solutions" rather than individual products and services [6, 8, 16, 23, 27, 29, 56, 57, 58]. Some companies (Nestlè, Rockfeller Foundation, Intel, Hotels Group, The Coca Cola Company etc.) and researchers have gone even further - their aim is to serve the environment, society and the poor by doing business [6- 8, 59]. An inclusive business is a sustainable business strategy that aims to benefit low-income communities while keeping its for-profit nature. It contributes to poverty reduction by including low income communities into its value chain [8]. The point of departure of the Creating Shared Value (CSV) concept is that the competitiveness of a company and the health of the communities around it are mutually dependent [6, 7].

1.3 Research design and methodology

In order to find answers to formulated research questions, various research methodologies, tools and techniques have been used. This research, is in general characterised as Action Research (AR), where ongoing actions are being studied in their natural setting while being included in the actions and processes of organisations that are being studied. An AR is driving knowledge from practice rather than from theory and therefore emerging findings and proposals are often reflecting local knowledge [60]. Traditional

research enables formalistic generalisation whereas AR enables naturalistic generalisation (practical knowledge). Although AR has a relatively free structure, there are some suggested goals and criteria for assessing the quality of the research (Table 1.1).

Table 1.1: Goals of Action Research and quality criteria [61]

Goals of Action Research	**Quality/Validity Criteria**
1) The generation of new knowledge	Dialogic and process validity (peer review of research)
2) The achievement of action-orientated outcomes	Outcome validity (successful outcome of the research project)
3) The education of both researcher and participants	Catalytic validity (the degree to which the research process reorientates participants in order to transform it)
4) Results that are relevant to the local setting	Democratic validity (how are multiple perspectives taken into account?)
5) Sound and appropriate research methodology	Process validity

As the roots of the entrepreneurship paradigm are also in psychology and sociology, it makes sense to use merely qualitative methods while digging deeper into value centric manufacturing business research [62]. Qualitative approaches are used when wishing to go beyond a mere description at a level that can be generalised in empirical investigations [62]. As this research ought to be practical, informative and real-life based, merely qualitative approaches are being used for gathering the data (interviews, questionnaires, self-assessments, hermeneutics), followed by the Grounded Theory Method (GTM) in the data synthesising phase, where theory is systematically generated from data [63]. Grounded Theory has been defined in the Handbook of Qualitative Research Methods in Entrepreneurship as a *theory derived from data that has been systematically collected and analysed using an iterative process of considering and comparing earlier literature, its data and emerging theory* [62]. Therefore it is a method for *synthesising* data and building up a theory based on information, knowledge and experience gained (Figure 1.3). The goal is to outline a set of essential qualities of complex (social) phenomena.

During four and a half years of studies, a research path consisting of six steps has been completed in order to answer research questions and solve research objectives (Figure 1.3). Grounded Theory Method has been used in order to form specification of proactive value centric business, by rotating between data, earlier literature and emerging theory.

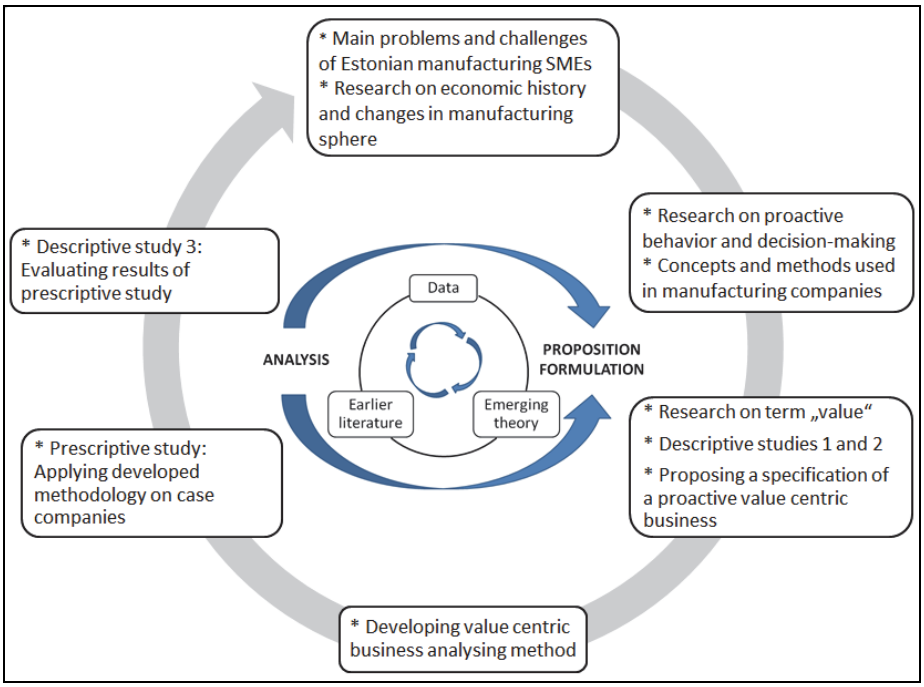

Figure 1.3: Research steps taken for this research

In the first step of the research, the European Union innovation strategies and Estonian governmental entrepreneurship growth and innovation strategies have been studied [3- 5, 12, 30]. Major problems to be addressed for Estonian Manufacturing enterprises have been established, together with strategic areas of focus. Research problem, questions and goals have been formed.

In the second step of the research, the history of economic development has been studied [2, 16, 25, 27- 29, 31, 47, 56, 57, 64, 65] and changes in the manufacturing sphere have been determined. A phenomena of proactive manufacturing business has been opened up [33, 66- 70] and a picture of the concepts and methodologies used today has been drawn. Lean manufacturing [14], six sigma [13], virtual factory [71]–[73], new product development [74, 75], Product/Service Systems [23, 24, 44, 76], enterprise resource planning (ERP) [77, 78], Service-Dominant Logic (S-D Logic) [9, 16–19, 25, 38, 43],

Creating Shared Value (CSV) [6, 7, 79] and inclusive business [8] fields have been studied.

In the third step of the research, a wide literature review on the term "value" has been conducted [41], looking for definitions from the fields of psychology [80], business strategy [33, 56, 81- 84], Product/Service Systems (P/S Systems) [23, 24, 85], virtual organisations [86], marketing management [9, 49], value network analysis [42] etc. Additional data has been gathered from Descriptive Studies 1 and 2 in order to answer RQ 1.

In the fourth step of the research, a specification of a proactive value centric company has been proposed, based on data from Descriptive Study 1 and 2, by using the Grounded Theory Method (Figure 1.5) [87]. We organised collected codes into concepts, categories and finally into a specification of a proactive value centric business, by rotating simultaneously between earlier literature, data and emerging specification. RQ 1 has been answered.

In the fifth step of our research, a value centric business development method has been constructed, based on a constructed specification of a proactive value centric business and previous knowledge from within Descriptive Studies 1 and 2. The method has been described and explained with examples.

In the sixth step of the research, the value centric business development method has been applied on four case companies. The process of this phase is being explained and feedback from questionnaires is being presented. Limitations of this method testing have been brought out and further directions for research have been proposed. RQ 2 has been answered.

Research phases

Current research is following Action Research principles and is therefore constructed differently from traditional theory-driven research. The knowledge gained from this research is rather deep and practical.

Descriptive Study 1 has been conducted in Case company A during 3 years of time, while being included in business processes as a general manager, therefore research has been done *by* an insider of an organisation rather than *to* or *on* an insider. The goal has been to understand the practice and the articulation of a rationale of practice, in order to improve it. In Descriptive Study 1, a phenomena of successful business has been investigated in its natural setting, while being included in Case Company A`s (CCA) decision-making and management processes.

In the beginning of the research (the first year) the author of the thesis was conducting research in CCA as an outsider. Information and data about how CCA functioned within its economic landscape was collected from the CEO through interviews and discussions. In the second and third year of the research, the author changed her role to an insider, a reflective practitioner,

and became a general manager of the company, aiming to learn, collect data and develop a CCA business model to be more value centric. Ideas on how to develop the business model arose from literature study that was being conducted in parallel. As CCA is a head contractor company, managing on average 6 projects in one season, it was possible to test different strategies and see the outcome of each change relatively quickly. In chapter 4 the results of Descriptive Study 1 have been presented.

Descriptive Study 2: in parallel with Descriptive Study 1, a wide literature study has been conducted and cases on a literature basis have been analysed. Business models of different successful companies (IKEA, American Express, Amazon, Merrild) have been described in chapter 4, based on how value is being created, transacted, exchanged and perceived.

From data collected from DS1 and DS2, a specification of a proactive value centric business started to form, following the Grounded Theory Method [62]. The convergence of findings enhanced confidence in the quality of the study, whereas conflicting findings helped to prevent the premature closure of data collection or analysis (Figure 1.5). The following steps were taken when analysing and proposing the specification of a proactive value centric business, based on data gathered from Descriptive Study 1 and 2:

I. *Codes* - identifying key points of the data,
II. *Concepts* - grouping the data,
III. *Categories* - forming broad groups of similar concepts,
IV. *Theory* - collection of categories that details the subject of research.

In the Prescriptive phase, a method for analysing and synthesising manufacturing businesses has been constructed, taking into account all the data and understanding gained from previous phases. Value centric proactive business development method consists of four stages and enables one to analyse companies` *value systems* from four different perspectives. The final stage of the method also helps to synthesise new ideas and concepts that have arisen and includes risk minimisation tactics for potential changes.

In Descriptive Study 3, method testing has been carried out on four case companies. As it was difficult at first to find companies to test the method on, the amount of time the companies need to invest in analysing their business was reduced. The research was conducted by the table-tennis principle - researchers created a draft of one stage of analysis and sent it to a case company for review. Case company improved and corrected the draft and sent it back to the research team etc. After proposing such a working principle, the companies agreed to participate in our research readily.

After sending companies` representatives the final version of the value centric business development analysis, Questionnaire 1 was sent out to map what companies` representatives perceived as benefits from business

analysis. Most of the feedback was positive, but as the feedback from Case Company E was rather negative, we decided to construct Questionnaire 2, asking more detailed questions about the proposed development opportunities from 10 employees within each company. Feedback results have been presented in charts in chapter 5.

Table 1.2: Research methods used in each phase of the research and results

Research question	**Research methods used**	**Research phase**	**Chapter**	**Results**
1. What characterises a competitive company?				
1.1 How does an economic system function?	Literature study		1, 2, 3	Companies create value by their offerings and customers judge the value of products and services *Value system* is a set of interactions (exploited and also unexploited) that can potentially create value.
1.2 How do successful companies function? What are their business models like?	Literature study Literature case analysis	Descriptive Study 1 Descriptive Study 2	2, 4	Nowadays companies need to be proactive and forestall the changes in the business environment, market and customer demands, because changes are happening at an increasing speed Data input for GTM.
1.3 What characterises a competitive company?	Grounded Theory Method	Descriptive Study 1+2	4	Specification of a proactive value centric business: constantly trying to make sense of their customers`, partners` and suppliers` decision making backgrounds; constantly trying to notice and use any unused potential within its *value system*.

2. How can Estonian manufacturing SMEs apply the characterics of a successful company?				
2.1 Are there any existing strategies or methodolo-gies?	Literature study	Prescriptive Study Descriptive Study 3	2, 5	It seems that keeping a company`s focus on selling service and values instead of tangible products enables one to open up the solution space of competitive advantage. Proposed value centric business development method consists of four stages: I Value Activity Cycles II Value Analysing Matrix III Analysis of possible changes IV Summarising results of the analysis

2. CHARACTERISING A PROACTIVE MANUFACTURING COMPANY

Nowadays companies need to be proactive and forestall the changes in the business environment, market and customer demands, because changes are happening at an increasing speed [1, 25, 31]. In order to be proactive, one needs to understand the history and be able to predict changes and trends. General directions of economic development show that we are moving to the direction, where companies need to become more human-centric and start offering solutions [6, 16, 23, 27- 29, 36] et. al. As traditional manufacturing companies have moved away from their end-customers, it is a challenge [20, 25].

The other challenge that companies face today, is information overload, which is experienced daily. When combining this challenge with less time for the planning and development of new strategies and products [69], the decision-making becomes stressful, with little time for analysis. In environments where changes are happening rapidly and where creativity and innovation are important, using intuition is found to be particularly suited [69].

A proactive business needs to have a sufficient amount of information about historical and future scenarios in order to predict changes and trends. When this information exists, an experienced manager can apply intuitive decision making and synthesise proactive business strategies [70]. As there is a general trend for increasing complexity and dynamism in most business environments, intuition is to play an increasing role in strategic decision making [69, 70].

There are some widely used methods for analysing businesses and planning strategies (PEST analysis, scenario planning, Porter's five faces analysis, SWOR, Balanced Scorecards etc.). As forming business strategies is more concerns *synthesising*, not analysing, increasingly used synthesising concepts for developing manufacturing company`s business strategies have also been considered in this chapter.

2.1 Proactive Behaviour

Proactive behaviour is not the same as an adaptive performance, in which individuals modify their behaviour to meet the demands of new situations. Although adaptive performance involves adapting to change, proactive behaviour involves initiating change. Problem prevention, acting to prevent the reoccurrence of challenges and barriers, have been identified as some examples of proactive behaviour [88]. In order to be proactive - initiate change, *relevant information* about the current situation as well as an idea of possible new situations is required.

In the field of individual psychology, Bateman and Grant [66] defined a proactive person as someone with a "*relatively stable behavioural tendency"* to initiate change in the environment. Proactive behaviour is a self-driven goal orientated process, including proactive goal generation and proactive goal striving settings. [89]. It has three key attributes: it is *self-starting*, *change orientated* and *future focused*. Theory and evidence suggest that proactive goals will be more likely to result in effective striving and hence achievement of the goal, if they:

- Are specific and challenging
- Are learning focused (rather than solely performance orientated)
- Include sub goals and planning (it is possible to get some feedback on the way to achieve a goal)

Goal generation process occurs before task engagement, creating a "plan for action" [90]. It involves envisioning and planning, in order to change the self and/or the environment, and bring about a new different [89]. Before an individual decides to act proactively, there has to be a set of motivations:

'Can do' motivation - self-efficacy perceptions (Can I do it? How feasible is it? How risky is it?),

'Why to' motivation - desirability of future goals (Why do I need to do it? What will I get?)

If individuals perceive that the effort involved is too costly in terms of money, time, energy or other resources relative to the gain they may provide, they will not engage in proactive coping. However, it has been found that *reason to* motivation is more important in proactive goal setting processes than *can do* states, especially for very long-term orientated proactive goals. It also appears that having fair procedures ensures that individuals feel safe to be proactive, whereas a lack of procedural justice might render proactive action as overly risky. If the leaders are passive in their personality, they might be "supportive", but not in ways that stimulate proactivity [89].

If an enterprise is seen as a self-conscious and rational organism with a goal to adapt in the environment and make profit, then it is possible to carry some theories and models from individual psychology over to the understanding an enterprise. As enterprises are managed by individuals, basic psychological theories must also be relevant in the business environment. Therefore, with reference to proactive behaviour in individual psychology, it can be proposed that a proactive enterprise:

- has a "relatively stable behavioural tendency" to *initiate change* in the environment
- tends to *make things happen*, by anticipating and preventing problems, and seizing opportunities [89].

Proactivity is very important in today`s decentralised workplace, where everything happens at increasing speed, there is greater competition and

enhanced pressure for innovation [89]. For our research, it is important to develop an approach for Estonian manufacturing SMEs, which would help them analyse their business environment and guide them to become more proactive.

2.2 Intuition in Decision Making

"The only real valuable thing is intuition," Albert Einstein

In order to make innovation process models simpler and more general, the common approach of making them abstract and generic is used. However, this approach also makes the models less practical to use in real-life situations [91]. Mintzberg argues [92] that strategy cannot be planned because planning is built upon analysis and strategy forms around the *synthesis* process. Strategic decision-making therefore needs to contain both rational and intuitive processes [69].

Successful visionary leaders often rely on their intuition. It has been discovered that the higher up the corporate ladder a business leader progresses, the more likely he is to rely on intuition and that 80% of successful CEOs have a highly developed intuitive decision-making style [68]. Small organisations are even more likely to rely on intuition [68, 69, 91]. Therefore, in view of the general trend of increasing complexity and dynamism in most business environments, intuition is likely to play an increasing role in strategic decision making.

Khatri and Ng [69] state that intuitive decision making processes evolve from long experience and learning. Logically systematised facts, patterns, concepts, techniques, abstractions and formal knowledge or beliefs are a foundation for intuitive decision making processes. Intuition is a "*synthetic*" psychological function and considers the totality of a given situation. It allows us to *synthesise* isolated pieces of data and experiences into an integrated picture. Therefore intuition is able to deal with more complex systems than our conscious mind is able to handle. An expert learns by experience to ignore the irrelevant patterns or pieces of information and consider only critical ones [69]. Intuitive experts are always looking for evidence of the contradictory, encouraging their staff to challenge their beliefs, and are constantly updating their decision-making foundation premises, while moving forward at any time [70]. In contrast to rational, analytical decisions, intuitive decisions have less structure and also involve feelings and perceptions. Nonetheless, intuitive decision-making draws upon *previously learned information* associated with that situation.

"The best leaders have the courage to act on what they know right now, and the humility to change their actions when they encounter new evidence. They advocate an 'attitude of wisdom'. Arguing as if they are right, and listening as if they are wrong," Bob Sutton.

Khatri and Ng argue in their work [93] that intuitive *synthesis* is more:

a. appropriate for strategic (or non-routine) decisions than for day-to-day operational (or routine) decisions;
b. effective in an unstable environment rather than in a stable environment.

Strategic decisions are characterised by ill-defined problems and incomplete knowledge that we have in dynamic business environments of today. There is a time constraint on collecting data/information and due to environmental instability, and a lack of reliability of data or information. In these situations, decision makers may benefit from intuitive *synthesis,* which helps to develop an understanding of the situation by drawing upon previously learned information and knowledge associated with that situation, and make relevant decisions.

Jack Welch (the former CEO of General Electrics) summarises the theoretical elements of intuition and decision making:

- **Pattern recognition** - where configurations and relationships are recognised in information and events;
- **Similarity recognition** - where similarities and differences, in past and present situations, are identified;
- **Sense of salience** - recognising (or assuming) the importance of events and information, and the affect this has on judgements.

Research on small companies states that the managers are not practicing systematic tools for decision making and design, and are rather using their intuition [91]. Therefore the new method needs to encourage intuitional data *synthesising* rather than time-consuming rational thinking.

2.3 How can a manufacturing company be proactive?

How can a manufacturing company *initiate change* and *make things happen*? In order to change something, one must understand the existing state and have sufficient information about the past and future [69]. Is it possible to guide Estonian manufacturing SMEs to become more proactive?

In general, there are two competitive business strategies a company can choose - cost leadership and differentiation [94]. Most of the modern manufacturing industries look to cut their costs and overheads, so they implemented distributed manufacturing and global manufacturing. Production is taken to low-cost production countries, far from customers and R&D departments. Modern Japanese Six Sigma and lean manufacturing concepts of today enable one to reduce waste, increase quality and fulfil customer needs [13, 14].

The other manufacturing strategy, that is becoming a trend in order to meet growing demands for flexible, fast, well-planned manufacturing, is differentiation (also in the Manufuture concept) [2, 27– 29]. This is also the

strategy that has been acknowledged to be suitable for Estonian manufacturing companies in Estonian entrepreneurship growth and innovation strategies [1, 5, 12]. The aim of this strategy is to increase *added value* for the customer, raise efficiency and be distinguished in the market. Frameworks such as New product development and digital manufacturing enable companies to reduce time-to-market and time-to-production [71, 73, 74]. Servitization of manufacturing holds product-centric services, where the manufactured product is in the centre of the proposition of an integrated set of services, in their particular interest [27, 29].

Although according to ICMA (1974) manufacturing is defined as: *the making of products from raw materials using various processes, equipment, operations and manpower according to a detailed plan that is cost-effective and generates income through sales,* in todays` economy, this is not enough in order for a manufacturing company to be competitive. Companies not only offshore and outsource their manufacturing activities, but also increasingly knowledge (research, development, administration). Manufacturing company also has potential to be perceived as a "knowledge container", contributing to business creation and innovation [2, 27, 28, 95].

Danish manufacturing and industrial production specialists have analysed five future scenarios for Danish manufacturing companies and concluded that [95]:

- Automation is necessary, but it will not solve problems on its own. The entire manufacturing set-up must be developed
- Productivity is necessary but it will not solve the problem on its own. It is the "efficiency" that must be increased in order to achieve value creation
- Ingenuity and creativity are necessary, but innovation emerges with rather than independently from manufacturing

"*The problem is never how to get new, innovative thoughts into your mind, but how to get old ones out"* says Dee Hock, business visionary and creator of Visa.

In this subchapter, tools and concepts that are widely used in manufacturing companies have been summarised (Figure 2.1). As making strategic decisions is a process of *synthesis* [68, 70, 93], concepts that would broaden the "playground" instead of making it more abstract and narrow need to be found.

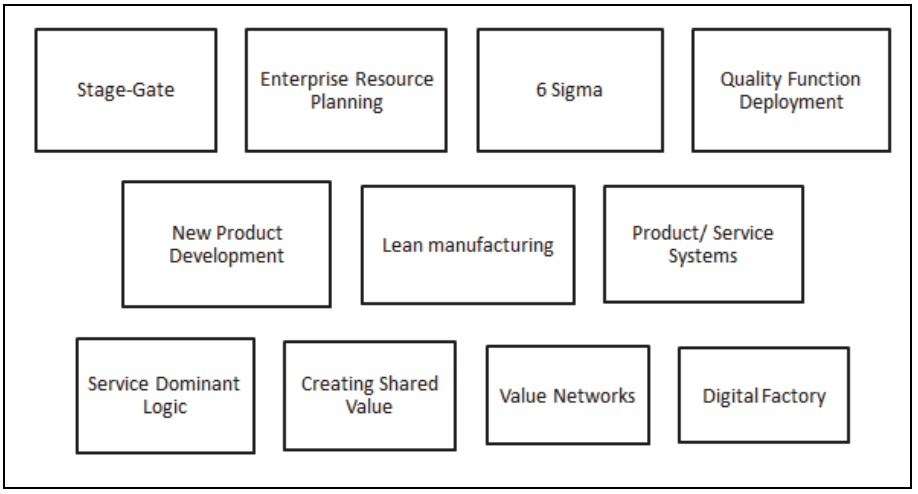

Figure 2.1: Methods and tools used in manufacturing companies

2.3.1 Tools and concepts used in manufacturing companies

1 Operational level

At an operational level, widely known tools are being used in order to simplify managing company`s processes, decision-making and foreseeing problems.

Enterprise Resource Planning (ERP) is a computer-based tool that provides an integrated real-time view of business processes. Common databases are being maintained by a database management system. ERP tracks business processes—cash-flow, material flow, production capacity—and the status of business commitments: purchase orders, orders, and payroll. Data is shared between different departments (sales, manufacturing, purchasing, accounting, etc.) and information flow is being facilitated between all business functions, and also connections to outside stakeholders [77- 78].

Stage–gate model is a project management technique in which an initiative or project (e.g., new product development, process improvement, business change) is divided into *stages* or *phases*, separated by *gates*. The continuation of the process is decided at each gate [96]. It has been found that 88% of U.S. businesses employ a stage-gate model to manage new products, from idea to launch.

II. Operational and tactical level

At an operational and tactical level, there are some concepts that have proven to be effective in increasing the quality of products and processes and increasing time-to-market.

Digital Factory is a phenomena having its roots in computer technologies and advanced virtual reality technologies [71, 73]. Digital factory integrates product development, production, plant design and operative production processes, enabling one to develop, model, test, optimise and control those processes before real implementation. Digital Factory concept can reduce time-to-market, time-to-volume, time-to-production [71- 73].

Lean Manufacturing is a systematic method for eliminating waste from manufacturing processes - *making obvious that which adds value by reducing everything else*. Lean aims to make the work simple enough to understand, do and manage. Some commonly mentioned goals are:

- **Improve quality:** In order to stay competitive, a company must understand its customers' wants and needs and design processes to meet their expectations and requirements.
- **Eliminate waste**: Waste is any activity that consumes time, resources, or space but does not add any value to the product or service.

Six Sigma method aims to improve the quality of process outputs by identifying and removing the causes of defects (errors) and minimising variability in manufacturing and business processes. It uses quality management (statistical) methods, and creates a special infrastructure of employees, who are experts in the Six Sigma method. Each Six Sigma project follows certain steps and has predefined targets, for example: reduce costs, reduce process cycle time, reduce pollution, increase customer satisfaction, and increase profits [13].

Quality Function Deployment (QFD) is a method for transforming customer needs (the voice of the customer [VOC]) into engineering parameters. While simultaneously setting development targets for new product or service, characteristics are being prioritised.

New Product Development (NPD) is a process designed for transforming market opportunities into products (either tangible or intangible) available for sale. In the centre of NPD processes, there are examples of best practices and the elimination of communication barriers. The NPD process basically has three main phases:

1. **Fuzzy front-end**: activities employed before the formal and well defined NPD or stage-gate process,
2. **Product design**: process from product development until pre-commercialisation analysis,
3. **Fuzzy back-end**: process from commercialisation planning until production and market launch [97].

III. Strategic level

There are also some strategic concepts that are proven to have a positive influence on manufacturing companies. Those strategic concepts are value- and service centred.

Some manufacturing companies see their service operations as an ancillary business, with lower importance than the "core" product business. That mind-set is outdated and risky [22], because the basis of competition is shifting toward the ability to drive business performance through excellence in service and parts management [21- 23, 25, 38]. Many manufacturing companies would have little or no profitability without the service business [28, 29]. Leading manufacturing companies, such as Siemens, Rolls Royce, AG Medical Solutions, Kone etc. have made service central to their business strategy, designing their service business around customer requirements in order to create customer satisfaction, loyalty, and business performance [22].

Some major business research fields that are evolving at high speed are discussed below.

Product/Service Systems (P/SS) field began to emerge in 2001 - the need for product surrounding services was admitted and a theory of (P/SS) began its rise. Manufacturing industry experienced a need towards a higher level of operational integration with their customers. Manufacturers can differentiate their offer from competitors by combining physical and software products with their service plans and service support operations [27, 28]. Potential advantages of integrating manufacturing and service business are optimised operational performance and insights into use phase processes [24, 23, 44, 85]. Service orientated product development is an approach that is proposed for the creation of these Product/Service Systems (Figure 2.2).

P/SS is able to achieve environmentally sustainable business activities by creating the highest possible use value of products for the longest possible time while consuming as few material resources and energy as possible [24]. Today's global competition demands that companies take greater responsibility for products throughout their entire life-cycle [23, 27, 29]. Instead of the product itself, the activity and knowledge associated with the use of the product are considered to be of more value to the customer [16, 20, 25, 38]. In the research community, the shift of business focus from product-orientated to service-orientated has resulted in the field of P/SS (and Service Dominant Logic, Creating Shared Value, Inclusive Business etc.). Today integrated product and service systems are being offered by more and more manufacturing businesses [21, 22]. Rolls-Royce aircraft department is offering a "Power-by-the-Hour" service package for aircraft engines, whereby maintenance, repair and overhaul services are charged per hour of flight [29].

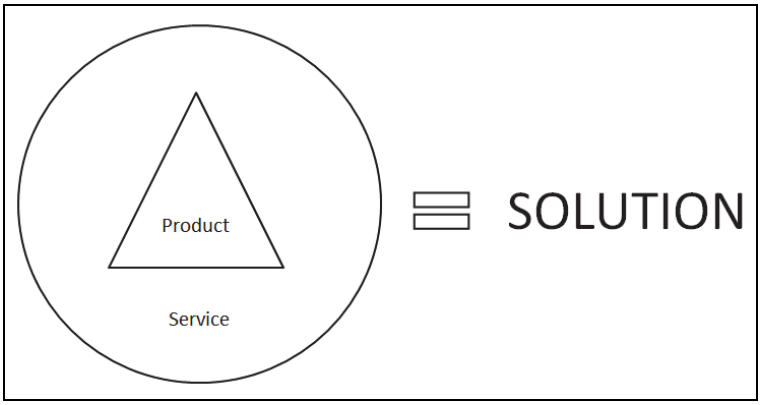

Figure 2.2: A model of Product/Service Systems

Service Dominant Logic (S-D Logic) began to shake the scientific world in 2004 (firstly the field of marketing) with their award-winning article "Evolving to a New Dominant Logic for Marketing" in The Journal of Marketing. In their provocative article in The Journal of Marketing, Vargo and Lusch introduce their new radical mindset of marketing, where the service is in the centre (instead of being a special case of tangible goods). Parties are doing things for other parties [16]. The new perspective also enables one to focus on intangible resources, the co-creation of value, and relationships [9, 15– 17]. S-D Logic is built on ten foundational premises [16].

In S-D logic, the customer is a co-producer of value rather than a target. Customers do not buy goods or services: they buy value in use - offerings, which render services, which create value [16, 46]. Offerings consist of interactive value components and noninteractive value components. Firms will increasingly be forced to compete on the interactive component of the offerings (knowledge and skills) – the noninteractive component (tangible products) becomes a commodity (Woodruff & Flint, 2006). Lusch and Vargo propose that the skills and knowledge are the most important types of resources that they call *service*. To illustrate this idea, they use the example of the microprocessor: "*human ingenuity and skills took one of the most plentiful natural resources on Earth (silica) and embedded it with knowledge. In the end, the microprocessor is a pure idea*". Resources are not; they become. Putting things together that others do not think go together, achieves something new and unique in the process (Ballantyne & Varey, 2006). Another example of service provision is trees being planted around buildings: in summer they provide shade and in winter they provide warmth.

The car would have no value if no one knew how to drive it, or had access to fuel and maintenance. Being socially networked adds another dimension to this example: particular automobiles have particular meaning, therefore some customers buy expensive cars in order to prove their status. The car only has

value when the customer makes use of it in the context of his or her own life. In this case, customers, manufacturers and social services co-create value (Figure 2.3) [9, 16, 41, 46, 98].

The service-centred view can be stated as follows [16]:

1. Identify or develop core competences, the fundamental knowledge and skills of an economic entity that represent a potential competitive advantage.
2. Identify other entities (potential customers) that could benefit from these competences.
3. Cultivate relationships that involve the customers in developing customised, competitively compelling value propositions to meet specific needs.
4. Gauge marketplace feedback by analysing financial performance from exchange to learn how to improve the firm`s offering to customers and improve firm performance.

As an example: Kone Cranes has been forced to start operating on Service-Logic, because their customers were not happy with maintenance service and started to move away to competitors (although customers were very happy with the product). Kone Cranes changed their: attitudes, behaviour, accessibility, punctuality, trustworthiness, capability to handle failures and mistakes, and gained their clients back.
Being a service business is a strategic choice, affecting all other areas of business.

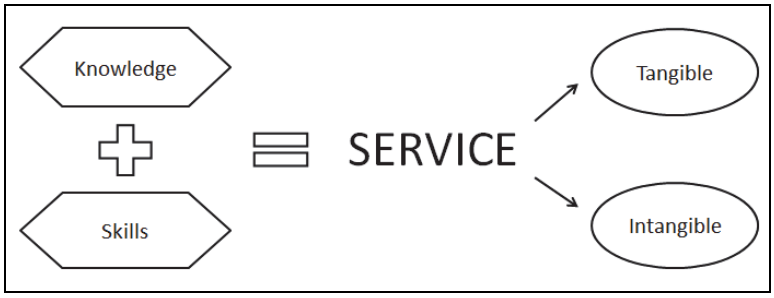

Figure 2.3: A model of Service Dominant Logic

Creating shared value (CSV) is a business strategy concept that was first introduced in the Harvard Business Review article" *Strategy & Society: The Link between Competitive Advantage and Corporate Social Responsibility"*. The fundamental premise behind CSV is that the competitiveness of a company is dependent on the health of the communities around it (Figure 2.4) [6]. Noticing and focusing these connections between societal and economic progress has the ability to unleash the next wave of global growth and to redefine capitalism. Companies can create shared value opportunities in three ways:

- **Reconceiving products and markets**: social needs can be met while serving existing markets, accessing new ones, or lowering costs through innovation
- **Redefining productivity in the value chain**: it is possible to improve the quality, quantity, cost, and reliability of inputs and distribution while not wasting natural resources and driving economic and social development
- **Enabling local cluster development**: companies and their surroundings are mutually dependent. In order to be successful, a company needs reliable local suppliers, a functioning infrastructure of roads and telecommunications, access to talent, and an effective and predictable legal system

Nestle, Intel, InterContinental Hotels Group and the Rockefeller Foundation are the pioneers of applying Porter`s Creating Shared Value strategies in their organisations [7]. Nestle has invested in their communities in order to improve their competitive context. Nestlé worked closely with the farmers of the Moga Milk District in India, investing in local infrastructure and transferring world-class technology to build a competitive milk supply chain that simultaneously generated social benefits through improved health care, better education, and economic development. They also educated grain growing farmers on how to grow more grain in fields, with higher nutritional value. Nestlè is able to pay more for high-quality raw material and also Nestlè customers are willing to pay more for nutrient dense breakfast cereals. This direction has emerged into an Inclusive Business concept [8].

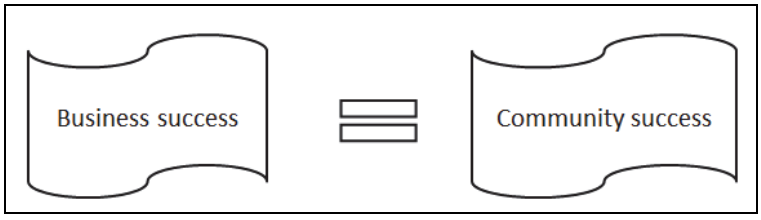

Figure 2.4: An illustration of Creating Shared Value main principle

Value Networks (VN) enables companies to improve their competitive context in which they operate by investigating their communities. External facing networks include customers or recipients, intermediaries, stakeholders, complementary open innovation networks and suppliers. Internal value networks include key activities, processes and relationships that cut across internal boundaries (order fulfilment, customer support, innovation etc.). Value is being created through relationships and exchange between different parties. Verna Allee defines value networks as "*any web of relationships that generate both tangible and intangible value through complex dynamic exchanges between two or more individuals, groups or organisations*" [42]. Any organisation where both tangible or intangible exchanges are taking place (whether private industry, government or public sector), can be viewed as a value network (Figure 2.5).

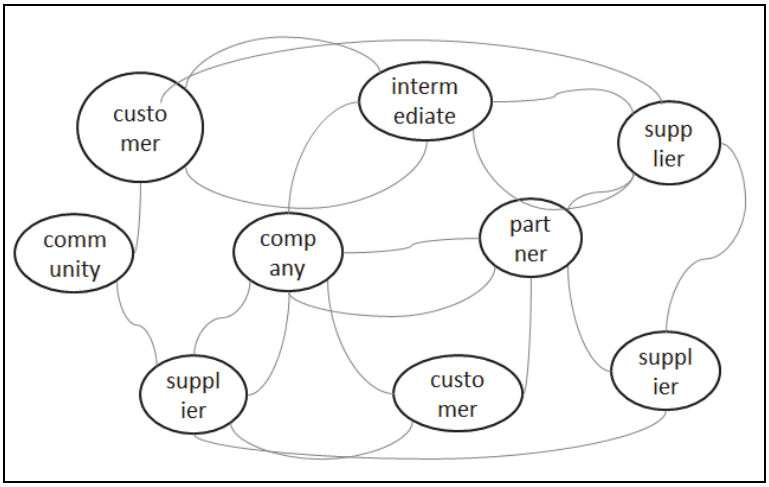

Figure 2.5: Model of Value Network

"*We do not sell "furniture" at Domain. We sell dreams*," Judy George, chairwoman and CEO, Domain Home Fashions

"*All growth will come from intellectually based services. All value chain elements are services. All services can be outsourced,"* James Brian Quinn

3. ANALYSIS OF STUDIES IN FIELDS LINKED TO THE CONCEPT OF "VALUE"

3.1 Value in Different Fields

As the meaning of customer value has naturally evolved concurrently with economic changes (business strategies, marketing, engineering design etc.), it is important to look at value in both an economic and a psychological context. To get a better understanding of how differently "*value*" is understood in different fields, an illustrative table of terms linked to value has been drawn (Table 3.1).

Table 3.1. Value in different fields and their interconnection

Term	Ref.	Field	Description
LEVEL 1: VALUE STRATEGY			
PSS	[23]	Product/Service - Systems	PSS approaches – as service – orientated business strategies that coordinate PSS development – PSS can be seen as a strategy to create a firm's value constellation
Value-based business strategy	[82]	Business strategy	Value-based strategies, are ways that companies can try to capture value
LEVEL 2: VALUE PERCEPTION			
Value created	[82]	Business strategy	Value created = willingness-to-pay – opportunity cost
Value added	[83]	Environmental Sustainability	"the extra value created when the overall level of environmental and social impacts is kept constant"
Value	[80]	Identity styles and value orientations	Value as a trans-situational goal varying in importance as a guiding principle in life; transcend personal, social, or institutional interests; informing people on what is good, beneficial, important, beautiful, desirable, constructive etc.
Product value		Business leadership	Product value consists of answers to questions: • *What the product does* (technical function). • *What the product is* (configuration/structure). • *Whom the product serves* (the customers). • *What the product means to customers*.
Value	[23]	Product/Service -System	A guiding system that determines which objects can act as satisfiers to needs. Perceived trade-off between multiple benefits and sacrifices gained through a relationship between a customer and company.

Term	Ref.	Field	Description
Emotional value	[86]	Business and organisation	"part of willingness to accept unexplained by the financial value of the ownership stake and the private financial benefits of control accruing to the owner".
LEVEL 3: VALUE PROPOSITION/OFFERING			
Value system	[86]	Virtual organisations	"each product/service requires a set of value creating activities to be performed by a number of actors, forming a "value creating system" through a virtual organisation".
Value constellation	[56]	Business strategy	Value as an infrastructure for value creation. Non-monetary currencies available for co-productive economic transactions can be seen as a value (education, healthcare systems…)
Value proposition	[49]	Marketing management	Value can be conceptualised as the relationship between the consumer's perceived benefits in relation to the perceived costs of receiving these benefits. Value = Benefits / Cost
LEVEL 4: VALUE CREATION			
Value for customer		Relationship marketing	Value for customers is created throughout the relationship by the customer, partly in interactions between the customer and the supplier or service provider.
Value	[42]	Value network analysis	Value consists of tangible and intangible. Success of a company depends on how efficiently it can convert one form of value into another.
Value creation	[85]	Product/Service - Systems	Value creation is in the resulting activity where both the physical product, supporting services and the customer all play a vital role

Table 3.1 shows that the term "*value*" is one of the central terms in many research fields related to engineering design, product development and business management. The term "*value"* is used widely in different academic fields, but defined differently depending on the context of use (Table 3.1). It can be seen as a common ground on which the actors of the economy may communicate [9, 15, 19, 25, 36, 41, 43].

Value can be defined as:

- ***high level principle and goal*** (guiding principle in life ([80, 83]);
- ***high level result*** (infrastructure for value creation ([9, 42, 56]);
- ***a specific relation*** (trade-off ([23, 49, 81]);
- ***a low level result*** (outcome of value creating process ([82, 99]).

Value seems to be the core concept of an integrated product, service business development and therefore a value centric model of these processes will be beneficial and is much needed. First, in order to interpret such a model it is important to appreciate how value is received or perceived, how value is created and how it may be transacted or exchanged. These considerations are discussed in the following sub-sections.

3.2 Perceiving the value

"*Value*" can be described as a mental concept. In the field of psychology, *value* is seen as a trans-situational goal varying in importance as a guiding principle in life; transcend personal, social, or institutional interests [80]. How people value different offerings, means that they perceive what is good, beneficial, important, useful, beautiful, desirable, constructive etc. They answer the question of why people do what they do and how they perceive values offered in market.

Companies create *value* by their offerings and customers judge the *value* of products and services [9, 16, 19, 20, 23, 36, 43]. However, no two people can have the same experience - each experience is derived from the interaction between the staged event and the individual's prior state of mind and being [34]. Therefore perceiving the *value* is individual and context dependent [41]. Consumers expect new products to be in harmony with their *values* and lifestyles, and industrial customers expect products to mesh with existing components in a work system or a production process [41, 42]. *Value* for customers is created throughout the relationship with the company, partly in interactions between the customer and the supplier or service provider [9, 19, 50, 56, 100].

3.3 Creating the value

The most widely known concept of v*alue creation* is Porter's value chain [84], where value is created linearly by multiple actors within a chain and then offered to the market (Figure 3.1).

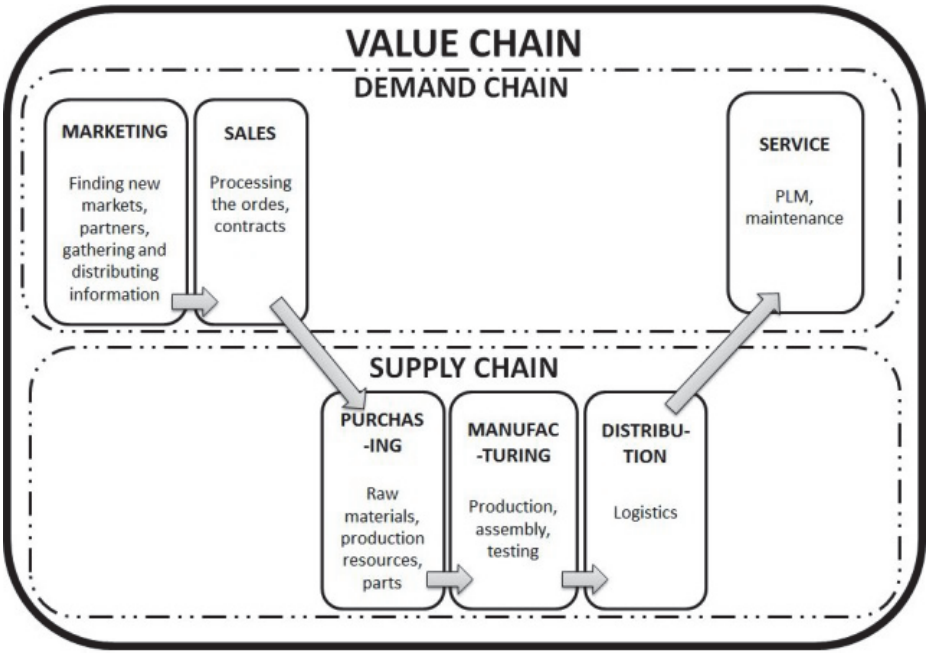

Figure 3.1: Value chain concept of Porter.

However, this concept has proven not to be suitable in the context of intangible products (services, knowledge, financial products) [25, 36]. New approaches in science and economy show that the "*value*" can also be shared or co-created (open innovation, open source software, strategic alliances etc.) [9, 41, 55, 101] by combining different assets and resources into a value in the same process (value star) [43, 56], or in interlinked activities (value network) [10, 42] (Figure 1).

Value propositions are borne by objects which can be products (physical goods), services, experiences, events, persons, places, properties, organisations, information or even ideas that describe quantifiable benefits that individual organisations making an offer promise to deliver [41, 42, 46, 49]. Therefore propositions include many interlinked activities and actors that are not creating value in a sequential pattern. Success of a company depends on how efficiently it can convert one form of *value* into another [42]. Figure 3.2 shows how different value stars can be brought together into a value network.

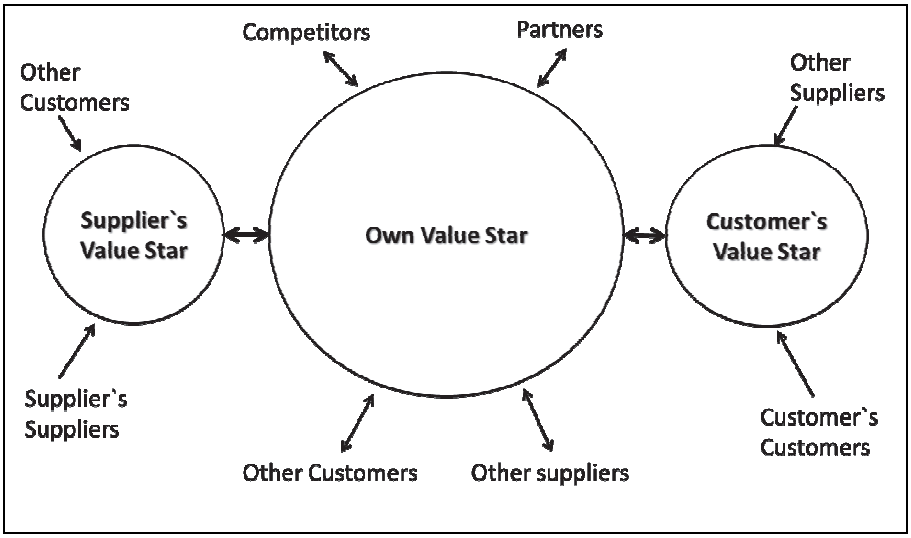

Figure 3.2: Value stars connected into a value network

3.4 Value exchange and transaction

In a business context, *value* is usually understood in monetary terms or a trade-off; 'Value created' is equal to the 'willingness-to-pay' minus the 'opportunity cost' [82]. If we perceive the whole economy as a set of pieces, it is possible to observe a wealth of different values (ideas, competences, relationships, raw materials etc.). Almost every *value* has a number of possessors and a number of actors within a system, who have a need or desire for some of those values (potential receivers). Possessors and actors attract each other as +/- magnets (Figure 3.2).

Actors can transact and exchange their *values* as they want, but the common way today is to offer financial currencies for a value. In a case where actors create *value* together in a chain (suppliers, sub suppliers), the key to a supplier to achieve a positive value is the existence of asymmetries [82] between the supplier and sub-suppliers. For a company to have positive *added value* (potential receiver's willingness-to-pay is higher) it must differ from its competitors in a beneficial way. Created value must be worth less to the possessor of the value than a receiver is willing to pay for it [82]. However, this does not always have to be the case in quaternary industries where information can be replicated at little-to-no cost to the possessor. Relationship marketing approaches take the perspective that it does not make sense to determine whether customers buy products or services, what they actually buy is the benefits that the products and services provide them with. From this perspective all companies basically offer services, even manufacturing firms [15, 16, 19–22, 25, 38, 102]. It is essential to consider as many *potential values* within a system, as possible, when designing an

offering in order to customise the value for a particular customer, create value effectively and give the customer benefits and the experiences demanded.

In Porter's value chain concept [84], the stream of values is one-way, company-centric and the market is separated from the value creating process (Figure 3). We see that understanding "value creation" in a wider, more interlinked context can unlock some potentially undiscovered market spaces for co-created values and therefore be an essential step for re-configuring businesses for a better fit in a global knowledge economy where customers, suppliers, partners, employees and relationships are seen as potential co-creators of value and experience. The value creating process can be seen as a value star, by linking many value stars into one *value system*, a value network is formed (figure 12). Within a value network, besides tangible goods, intangible values can also be exchanged and shared (information, customer base, relationships, experience etc.), without being converted into tangible values [10, 42]. American Express uses "barter currencies" for longer-term relationships with hotels, shops, restaurants etc. It gets distribution outlets of their partners' services (hotels, shops, restaurants) in exchange for bringing their strong customer base to the same places. Customer base has been exchanged with other forms of value (service discounts).

In a business environment, where there are many actors within a value creating process, there needs to be someone orchestrating this process by creating a collaborative environment and managing the whole process [103]. From this point of view we can see a company as an environment and as a set of relationships combining different values consisting of services, products and knowledge about the contexts into customer benefits and experiences (Figure 3.3).

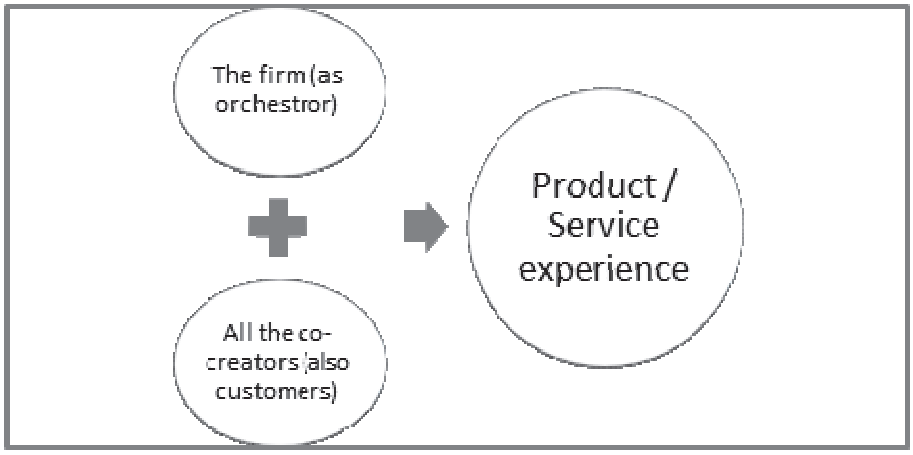

Figure 3.3: Cross-border market co-creation by Pitelis and Teec 2010

3.5 The value system

"Many different interpretations of *value* co-exist. Sometimes it is the (re)-interpretations of value that reveal new value" [41, 57]. The meaning of *value* and the process of value creation are shifting rapidly in the economic environment from a product- and firm-centric view to personalised consumer experiences [36]. Companies who discover changes and possibilities within the *value system* first and make use of these are considered to be Prime Movers and often are more successful than the late adapters [56].

One of the major problems associated with forming complex *value systems* and alliances with other actors in order to create value, is the possibility that the other actors may reconfigure their *values systems* in such a way that your companies' offerings no longer hold value. Thus it is fair to assume that the greater the number of opportunities available within a *value system* the more fragile the system is, meaning it consists of many reconfiguration possibilities for the companies to be aware of; this is described by Richard Normann as the value space, and the fragility is the density of the system, that determines to which degree it can be reconfigured [56].

In this work the *value system* is understood as a set of interactions (exploited and also unexploited), that can potentially create value. Almost every value has a number of possessors and a number of owners within a system, who have a need or desire for some of those values (potential receivers). Possessors and owners attract each other as +/- magnets (Figures 3.4 and 3.5). In the *value system*, some values can be hidden or unnoticed, some can be unevenly distributed etc. There is often some unused potential.

In figure 3.4 company A`s *value system* is presented with the help of the Value Activity Cycle method [41], which consists of two steps:

- Write down all the activities every player in the *value system* (Company A, Customer, End User) goes through in order to receive, exchange and use different values (what every actor must do in order to buy, use, create, exchange different values?).
- Mark the interactions between different parties with different star-shapes (who interacts with whom at different stages?).

How to read Value Activity Cycles:

From each Value Activity Cycle, one can see what activities must be completed pre contract, during contract and post contract in order to create value or use value (for example: in order to buy bread, a customer must choose the store, find a parking-spot, find the bread section etc.; in order to sell bread, a factory must develop and test receipts, create a brand, organise logistics etc.). Those activities form rays of Value Activity Cycles.

While completing these activities, each party must interact with different actors (logistics company, friends, partners, suppliers, payment devices etc.).

Interactions between different parties are marked with different star shapes at ray ends (for example customer interaction with Company A, customer interaction with other companies, Company A's interaction with other companies etc.). There interactions can be seen as a pull-pull system that form a Value Network.

Value Activity Cycle method enables one to offer a relatively broad understanding of what goes on within the *value system*: who interacts with whom, when takes this interaction place etc. Now it is possible to start analysing the reasons behind those interactions, if we see interactions as a pull system (+ and – attract each other). Based on this understanding, it is now possible to start thinking about how to change this *value system* in order to make it more effective and beneficial.

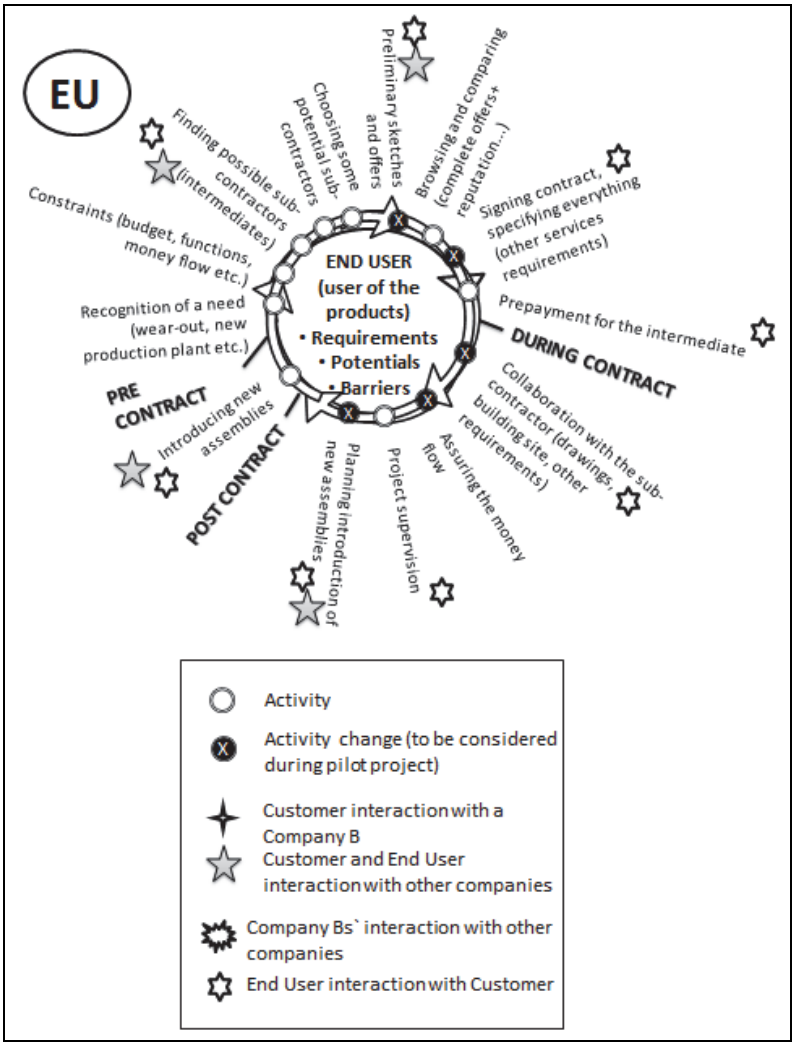

Figure 3.4: Example of a Value Activity Cycle

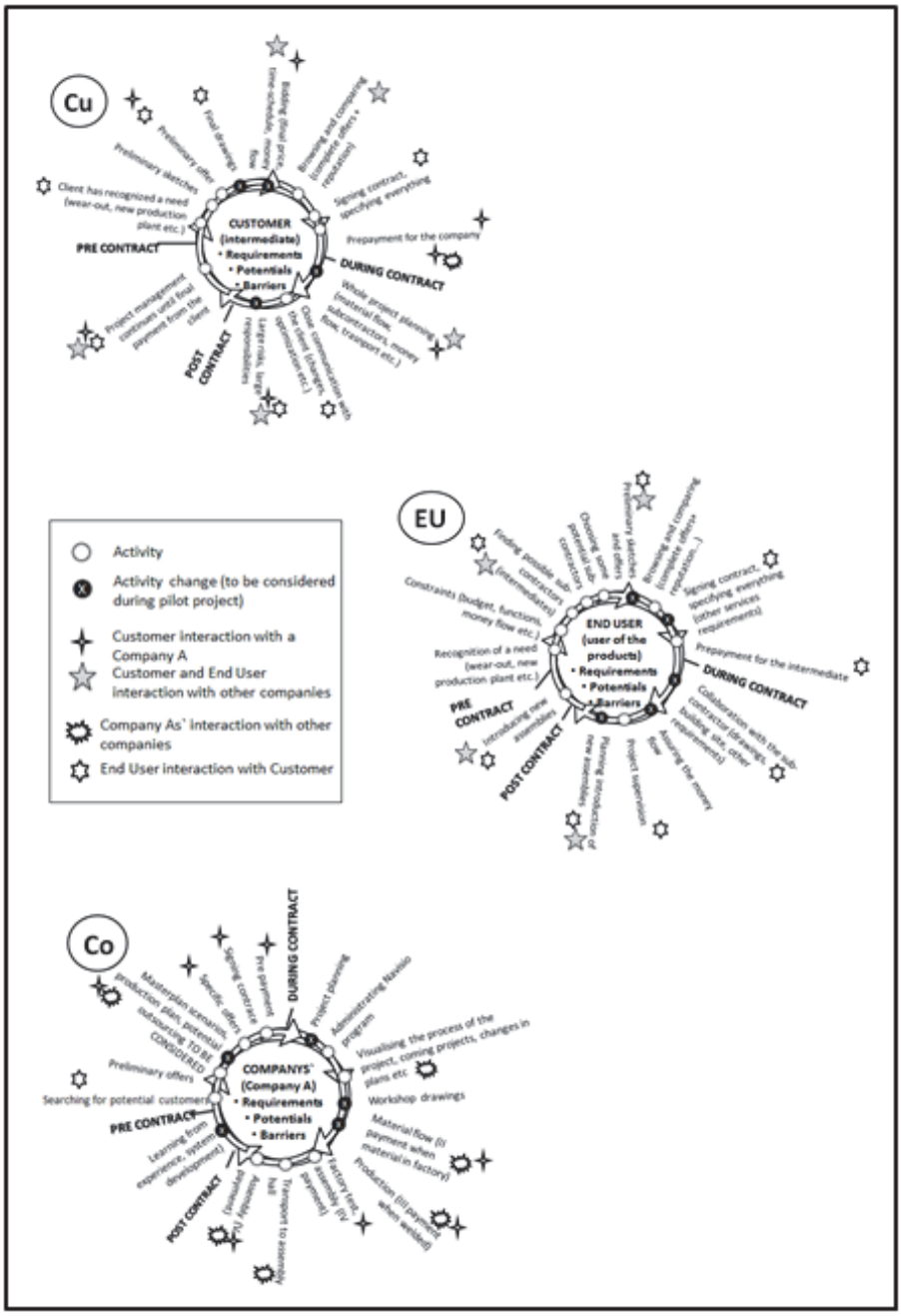

Figure 3.5: Value Activity Cycles of Company A and its Customers and End-Users

4 BUILDING THEORY OF PROACTIVE VALUE CENTRIC BUSINESS

This chapter describes the process and results of the descriptive phases of our study (Descriptive Study 1 and 2).

Descriptive Study 1 (DS1) has been conducted in Case company A (CCA) during 3 years of time, while being included in business processes as a general manager; therefore, research has been done *by* an insider of an organisation rather than *to* or *on* an insider. The goal has been to understand the practice and the articulation of a rationale of practice, in order to improve it. In Descriptive Study 1, a phenomena of successful business has been investigated in its natural setting, while being included in the CCA`s decision-making and managing processes. Ideas on how to develop the business model arose from a literature study (Descriptive Study 2), that was being conducted in parallel. As CCA is a head contractor company, managing on average 6 projects in one season, it was possible to test different strategies and see the outcome of each change relatively quickly.

Descriptive Study 2 (DS2): in parallel with Descriptive Study 1, a wide literature study has been conducted and cases on a literature basis have been analysed. Business models of different successful companies (IKEA, American Express, Amazon, Merrild) have been described, based on how value is being created, transacted, exchanged and perceived.

From data collected from DS1 and DS2, a specification of a proactive value centric business started to form, following the Grounded Theory Method [62]. The convergence of findings enhanced the confidence in the quality of the study, whereas conflicting findings helped to prevent the premature closure of data collection or analysis (Figure 1.5). The following steps were taken when analysing and formulating a proactive value centric business specification, based on data gathered from Descriptive Study 1 and 2:

We have chosen to use the Grounded Theory Method (GTM) in order to build theory from data and analysis (Figure 1.5) [62]. We go through four steps:

1. *Codes* - identifying key points of the data to be gathered,
2. *Concepts* - grouping the data,
3. *Categories* - forming broad groups of similar concepts,
4. *Theory* - collection of categories that details the subject of research.

From the data collected, the key points are marked with a series of *codes*, which are extracted from the texts and analysis. The codes are grouped into similar *concepts* in order to make the data more workable. From these concepts, *categories* are formed, which are the basis for the creation of a *theory*. GTM is a systematic generation of theory from data that contains both inductive and deductive thinking.

In this chapter codes extracted from Descriptive Study 1 (research within Case Company A) are brought together with codes derived from Descriptive Study 2 (case analysis on literature basis). GTM is used in order to form a theory of proactive value centric business.

4.1 Research within Case Company A

The first descriptive phase of this research has been conducted in Case Company A, where the author of the thesis was included in business processes (decision-making, managing, marketing, bidding, accounting, construction, processes) during 3 years of time. This was a sufficient amount of time for gaining a feel of how the company worked within its economic landscape and help it develop its value propositions and business-model. This subchapter describes how knowledge and experience from within Case Company A has been collected [41].

4.1.1 Methods used for describing Case Company A

Design and the creativity and innovation involved in it are "living things moving in a field." By limiting their movements, they may be described with greater accuracy, but their natural movements then slip away from the scope of such delineation [104]. It is a challenge to describe an organic system. As roots of the entrepreneurship paradigm are also in psychology and sociology, it makes sense to use qualitative methods while digging deeper into this research [62].

During the first stage of Descriptive Study 1, information, experience and feelings were gathered from within Case Company A. During and after active research-period various qualitative data collecting strategies were conducted, such as interviews, conversations, observations, documentary studies and self-reports [57, 62]. Although the economic landscape is constantly moving and the business is constantly developing, the numbers, indicators and trends before, during and after the research were also analysed.

4.1.2 General Description of Company A

Company A is a successful micro-sized company founded in 2006 and offers turn-key solutions in the area of industrial construction, using developed modular solutions. Regular clients are industrial companies and farms that need fast and effective construction service [98].

Company A is outsourcing all the services it needs (accountancy, construction drawings, material transport, montage etc.) and is mostly seasonal (projects are executed from late spring till early winter, when the dirt is soft). The small size gives it some advantages: low fixed costs, dynamics, independence, and efficiency, easy and transparent management.

Table 4.1 shows Company A`s economic indicators and descriptions of the economic environment within the construction field at the time. Although the number of contracts annually has varied over time, the average contract volume

and turnover has constantly been raising, even though the competition has grown and EU subsidies have been reduced. This proves that Company A`s business model is strong and working well in its niche market.

Table 4.1: Case Company A`s economic indicators and background information

	2006	2007	2008	2009	2010	2011	2012	2013
Number of contracts	3	6	10	12	12	14	8	4
Average contract volume, EUR	33 300	33 300	36 000	38 400	33 700	53 800	163 100	237 300
Biggest changes in business environment	Economy develops fast and chaotically. Many companies experience growth.	Continual re-organi-sation of economy. Determi-nation of state inspection system and standards.	Economic crisis. Russia's economic stagnation, which was manifest ed in the re-profiling of the industry in Estonia.	Export growth to EU countries.	Organi-sation of the market, the outflow of construct-ion workers in Finland.	The rapid develop-ment of the economy.	Economic crisis.	The EU subsidy reduction. Organisa-tion of the market.
Biggest changes in business model	Rapid growth of orders due to low competi-tion.	Gaining experience in the business, develop ment of business standards.	Previous orders are good references for new clients.	Several orders to Finland and Aland.	Previous ly built buildings work as advertise ment.	Hiring managing director.	Contracts become bigger.	Reduction of orders and EU subsidy. Competiti on grows.
No. of quotes made	36	70	120	320	380	460	460	500
Quotes to contracts, %	8.3	8.6	8.3	3.8	3.2	3.0	1.7	0.8
Turnover, EUR	100 000	200 000	360 000	460 700	404 700	753 800	1305000	949 400
Profit, EUR	2 000	4 000	6 800	15 000	7 800	20 000	25 000	19 800

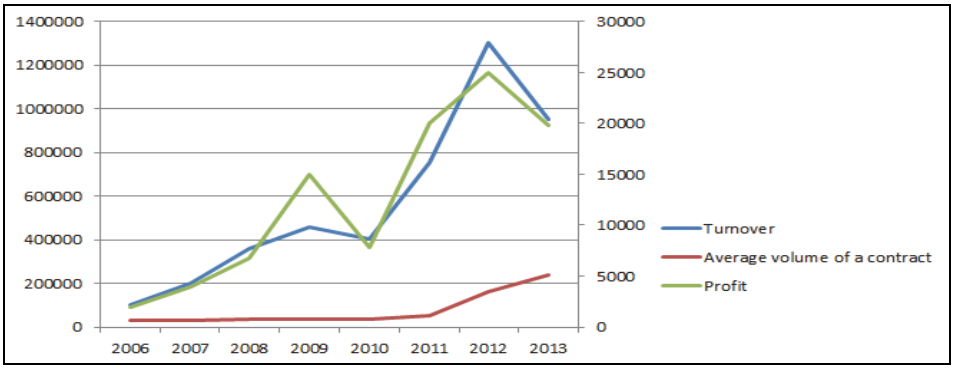

Figure 4.1: Changes in Company A's key performance indicators in 2006-2013

4.1.3 Perceptions from within Company A

Company A is customer-centric, trying to understand the context and needs of every client. It is open and honest, telling potential customers that "in the end, you are paying for everything", therefore the client is motivated to choose what they want to pay for and what not (whether they want to pay for additional security and storage room or let construction workers keep their machinery in the customer`s existing facilities).

Table 4.2 shows some major tactical changes of Company A and their impact, compared with common practice in the industry. It appears that Company A is approaching its clients personally and is willing to customise offers that enable saving and economic efficiency. Company A attempts to sense the *value system* and use its customer`s resources, therefore engaging customers in construction process, if they feel interested. This creates an emotional attachment to the new building (usually a life-dream of a man) and helps them to reduce building costs. Company A is keeping its dynamics by employing as few workers as possible, buying services from all over Estonia, to make use of the internet era and keep the costs low. Company A brings together construction workers, designers, manufacturers and logistic companies to discuss issues regarding product manufacturability, assembly, cost etc. Company A is always developing its design and services to raise efficiency and lower costs.

Table 4.2: Common practice and changes from Company A

Field	Common practice in the construction industry	Changed practice in Company A	Outcome of the changes
Contract	• Cost for a shed, guards, toilets etc. are included in the price.	• If the client has a secure shed close to the building site and allows the storage of engineering tools there, then the price is excluded. The same goes with toilets etc.	• It is clear to every party that in the end, the client is paying for everything, so the client can customise its construction contract and service.
	• Cost for all the machinery needed is included in the price.	• If the client has some sort of machinery that can be used in the construction process (lift, tractor, bucket etc.), then the price is excluded.	• It is easier for Company A to organise machinery at the building site. Contract price is reduced.
	• Contract and payment schedule is fixed.	• Contract and payment schedule are beneficial for both parties (a balanced compromise is worked out).	• The contract is customised for both parties. Contract follows good business ethics and is targeted for win-win solutions.
	• Contract is long, precise and contains juridical text that is difficult to understand.	• Contract is short and is based on good business ethics. Main principles are agreed, and both contract partners are working to fulfil their responsibilities.	• Partners are equal and are willingly trying to fulfil the contract. Often evolving into good cooperation.
Construction	• Usually site managers are not discussing issues with construction workers or asking for their opinion.	• Site manager is communicating closely with construction workers, to get their feedback on construction design, schedule etc.	• Quite often construction workers give good suggestions on how to raise efficiency and develop construction design. This practical knowledge can be used in coming projects.
	• Construction companies employ workers and have to pay for accommodation, duty assignment and transportation.	• Company A hires local construction workers, close to the building site.	• Price for construction works reduces, local workers get some work and can suggest their local friends and companies when needed (cranes, splinters etc.).

Production	• Usually companies give drawings to production and expect exactly what has been drawn.	• When giving drawings to production, Company A asks for alternative suggestions for a better price and better manufacturability. Often the production company has long discussions with the project designer to make compromises where practical.	• Practical, cost effective design (also in the future, because the project designer has been involved and educated).
Design	• Usually designing departments have no practical experience and have had no practical discussions on the manufacturability of their design.	• Company A brings designers together with manufacturers to discuss optimising the design and reducing price.	• Price for a client reduces, the system becomes more effective.
	• Usually designers make over dimensioned drawings (because they do not need to calculate so precisely then, and then they feel less responsibility).	• Company A requires their designers to not over dimension designs, where it is not needed.	• This often makes designs lighter and reduces the price.
Location	• Companies usually have representative offices. This raises the fixed costs and flexibility of company.	• Company A has no representative office. It holds meetings in various cafe`s and rather visits clients at building sites.	• Client does not need to pay for office or secretary to make coffee.
	• Usually construction companies hire designers, accountant etc. and makes them work in the office.	• Company A buys designing, accountancy and other services from specialists all over the country. Information is shared by e-mail or phone calls.	• Prices are usually lower than in big cities and people are better at cooperation. This also gives better flexibility compared to employed workers.
Emotions	• Usually contracts and construction works are as emotion free as possible.	• Company A enables its clients to customise its service and include them in the construction process.	• This creates an emotional link between the client and its new building that is usually much appreciated. It also helps to raise efficiency within the *value system*.

4.1.4 Results of Company A studies

Some highly valuable data has been collected from Case Company A that can be used in the following research steps. Case Company A appears to be a value-centric business with a proactive operating style. It is successfully using a different business model to other construction companies in Estonia.

1. Company A is aiming for *system efficiency* and *cost reduction*:
   - Is trying to view the *whole value system*
   - Is enabling its *customers to contribute* to the construction process
   - Is *outsourcing* most of the services it needs. This also keeps the company *dynamic*
2. Is *gathering information* from construction workers, designers, production companies etc. for *better ideas and development*
   - Is ordering from smaller companies from all over Estonia
   - Company A is *flexible* in order to achieve *win-win-win solutions*
   - Contracts are *simple* and developed for a mutual win, if possible
   - Company A is *listening* to suggestions from its construction workers, manufacturers etc.

After some experience in Case Company A, the author of the thesis started to feel Company A`s thinking pattern. Company A was intuitively trying to feel and see the "big picture", to notice any unused potential in this picture. They were constantly trying to make sense of their customers`, partners` and suppliers` decision making backgrounds:

- Why the actors are acting like that? (their needs and wants),
- Can they act differently? (their potential, resources) and
- Why don`t/can`t they act differently? (their barriers, restrictions).

This data, knowledge and experience is taken to the next step of research, where the theory of proactive value centric business is being formed, using GTM [87].

4.2 Literature research on value-centric businesses

In Descriptive Study 1, data and experience from within Case Company A has been collected. In Descriptive Study 2 analysis of different business models on a literature basis is continued in order to see the pattern and ultimately form a theory based on the Grounded Theory Method.

4.2.1 Literature case analysis: value distribution strategies

The following cases were chosen as innovative examples of *value system* reconfiguration in order to increase the number of *codes*, to form *concepts* for our Grounded Theory building process:

- IKEA's strategy is 'value co-production' with its customers (Figure 5). Customers check, choose and pick up their furniture and transport it home by themselves. IKEA only provides the design and development of products, packaging and storage. Together with the customer they save money. The place of assembly has moved from the factory to the customer`s living room, the time of assembly has moved and is now a part of the customers use phase, the assembly has moved from a factory worker as an economic actor to the customer and the customer very likely designs a value-creating constellation consisting of friends or family members to help

with the assembly (potential expansion of customer base for the company). IKEA has realised the previously *unknown potential* of customer value (will to cooperate, co-create in order to save money) and *barriers* keeping them from using their potential (unsuitable size of packaged traditional furniture, complicity in assembling, need for special tools when assembling). Furthermore, by *excluding activities not valuable* for IKEA (organising transportation, assembly) and *including activities that increase* customer experience (free time spending environment - cafeteria, children's corner), IKEA is offering an *effective furniture co-creation system*. By re-configuring the *value system* and changes in product and service propositions, IKEA became a Prime Mover. Together with the customer they save money.

- Merrild Coffee Systems are offering coffee solutions for the professional market (B2B). Their mission statement is as follows: *Together we ensure that you will serve the best cup of coffee*. They offer their value through a classical Product/Service-System, where the ownership of the product is moved from the end-user to the supplying company, they are renting out coffee vending machines, installing them, and maintaining them through supplying all the substitute products (coffee, cups and filters). They take care of all maintenance (preventive maintenance, hygiene inspections etc.). They even offer different packages/levels of service that they call: *Service á la Carte.* Merrild saw an opportunity within their existing product portfolio to create a product for the professional market, which would strengthen the quality of the coffee (through a high-end coffee brewing machine, regular and correct maintenance and by supplying quality coffee in different variations), reduce the activities/resources needed from the customer-site to support coffee making at their working environment. Merrild created a new business through Merrild Coffee Systems by creating a new value *constellation* that took into account the *new value perception* of the professional market compared to the home.
- American Express uses intangible "barter currencies" for achieving *longer-term relationships* with partners within the service industry and customers. It gets distribution outlets of their partners` services (hotels, shops, restaurants) in *exchange* for bringing their strong customer base to the same places. By *sharing values* (customer base and distribution outlets) all the players within the system (American Express, partners from service industries and customers) have some benefits from the long-term relationships created.
- Amazon.com - is not the same as a simply bookstore. It has embodied the use of technology, use of people, linkages to customers, relationships with suppliers and is structured as a "portal" rather than a bookstore. Customers value the forum-environment and that they *can customise their own value* (order) by clicking and combining different value perceptions, depending on their context of need. Amazon has managed to *combine different forms*

of potential (forum environment, value co-creation) in a way that gives a unique customer experience.

Although in most of the business strategies customer *values* and firm values overlap, there are some extreme cases where customers actually want the opposite benefits and experience to that which the company is willing to offer (or vice versa). Private hospitals/the healthcare industry and medical industry underline this imbalance greatly. Private hospitals are dependent on patients with some kind of disease and get value through income from customers with health problems. This can in the worst case result in the companies having a disinterest in the patients getting cured, and thereby being independent of the hospital.

These above mentioned companies know how to distribute or "*unbundle" the total set of activities and values* and combine them in a way that converts them into higher value (benefit, experience) or lower cost. As there are some forms of potential in the value network to interconnect customers, companies and other actors within the system to create together more value, this is an opportunity that companies should look for in order to engage customers in long-term relationships, achieve positive word to mouth promotion and make the value creating process more effective. As value shifts to experience, the market is becoming a forum for conversation and interactions between consumers, consumer communities, and firms [36]. Understanding and using this understanding is what makes these companies innovative.

4.3 Forming a specification of a proactive value centric business

In order to form a specification of a proactive value centric business, we used the Grounded Theory Method and organised the collected codes (From Descriptive Study 1 and 2) into groups - concepts and formed a specification of proactive value centric business (Figure 4.2).

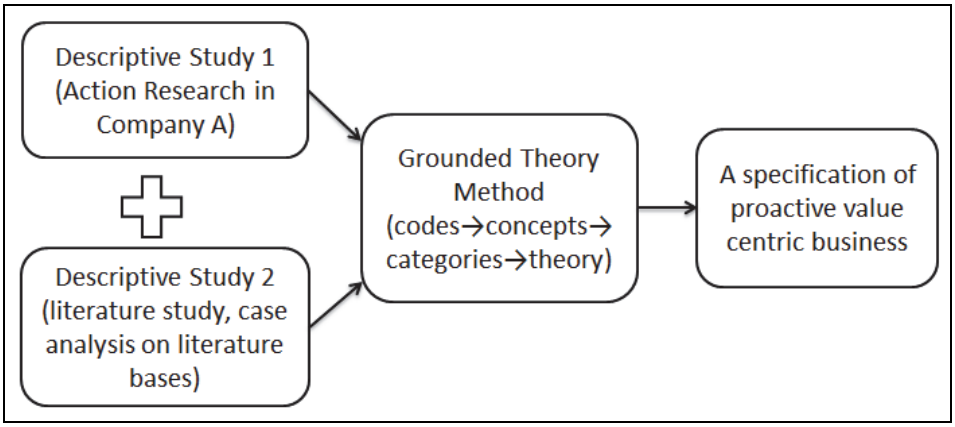

Figure 4.2: Steps taken to form a specification of a proactive value centric business

Codes

The codes we extracted from Descriptive Study 1 are:

> Big picture, system efficiency, cost reduction, customer contribution, outsourcing, dynamics, gathering information, new ideas, development, utilising smaller companies as suppliers, flexibility, win-win-win solutions, simplicity, communication.

The codes extracted from Descriptive Study 2 are:

> Co-production, unknown potential, barriers, excluding activities not creating value, including activities creating customer value, forming an effective co-creating system, new value constellation, new value perception, long-term relationships, exchange, sharing values, combine different potentials, design customer experience, "unbundle" and re-configure the total set of activities and values.

Concepts

Those codes can be organised into groups, concepts:
A value centric company:

- **Sees the big picture** - is able to "unbundle" and re-configure the total set of activities and values, is constantly gathering information, new ideas, long-term relationships;
- **Is aiming for system efficiency** - cost reduction, customer contribution,, simplicity, co-production, forming an effective co-creating system, excluding activities not creating value, sharing values, combining different potentials, removing barriers, win-win-win solutions, exchange;
- **Is increasing customer value** - customer contribution, including activities creating customer value, designing new value constellations and new value perceptions, designing the customer experience.

Proposal

The above concepts can be organized in proactive value-centric business specification:

A proactive value centric company is constantly trying to make sense of their customers`, partners` and suppliers` decision making backgrounds:

- Why are the actors acting like that? (their needs and wants),
- Can they act differently? (their potential, resources) and
- Why don`t/can`t they act differently? (their barriers, restrictions).

A proactive value centric company is constantly trying to notice and use any unused potential within its *value system*.

By describing the "big picture" about the situations that the customers, the company itself and other actors within a system are going through, it is possible to see ways to increase system efficiency as well as customer value.

5. METHOD FOR DEVELOPING A VALUE CENTRIC BUSINESS

In the Prescriptive Study phase of our research, a method around proactive value centric business specification is constructed and applied on four different case companies.

Value centric business development method consists of four stages (Figure 5.1):

I. Value Activity Cycles
II. Value Analysing Matrix
III. Analysis of possible changes
IV. Summarising results of the analysis

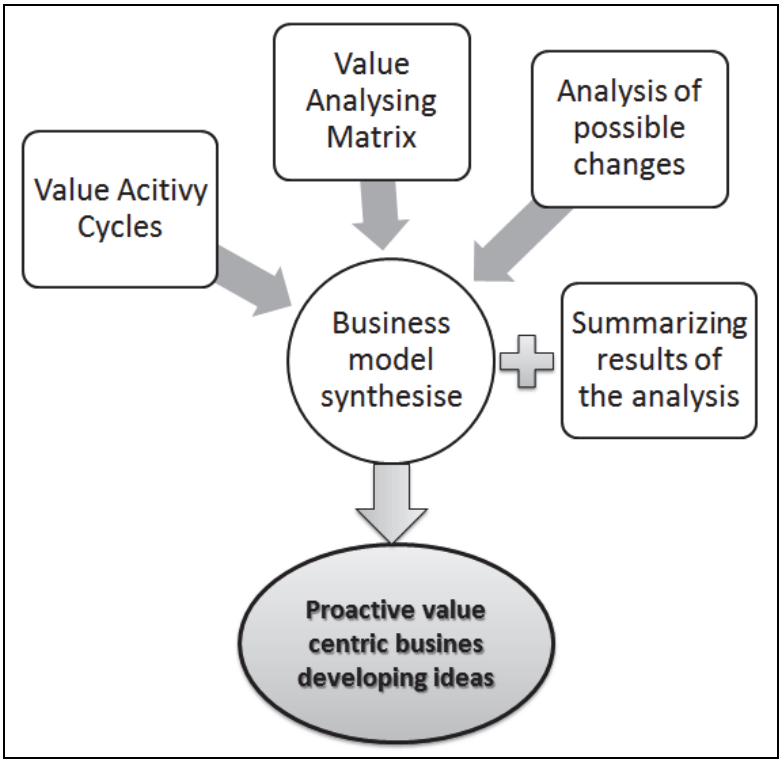

Figure 5.1: Stages of value centric business development method

After analysing values being created, exchanged and transacted within the *value system* of a company from multiple perspectives and levels (Figure 5.1), a company is able to see the "big picture" and notice any unused potential within its *value system*. A company then understands their customers`, partners` and suppliers` decision making backgrounds and is able to re-combine their *value*

system for a better fit, higher added value, more efficient use of resources and cost reduction.

5.1 Analysing the value system with the value centric business development method

5.1.1 Stage 1: Value Activity Cycles

In order to understand value seen from a customer's point of view (value in a customer context), it is vital to get insight into the activities of the customer needed to possess the value, which is where the customer values are perceived [23, 44]. This can be seen as the framework for the total customer experience, as it brings in a time dimension of the value. Vandermerwe [105] has developed a graphical information model to get insight into the Customer-Activity Cycle (CAC). The CAC focuses on the activities that the customers go through to get the benefits of the offered products and services. It consists of three stages containing activities in relation to the utilisation of the company's offerings: *pre* – before use; *during* – in use; *post* – after use. The activities are placed on a cycle, to illustrate how they are affecting the customer, with the central stakeholder in the middle [44, 105, 106].

Further development of the CAC has been created, resulting in the Value Activity Cycle (VAC) [41, 64], as a tool to conceptualise *value systems* (Figure 5.2). What is interesting to explore within this cycle, besides the supplying network, are the inherent and the maybe unused recourses of the customer, as these are adding value to the total *value system* [56]. Vandermerwe's focuses on how the company can *add value*, by looking at the *critical points* which are representing value gaps that hold opportunities for the company to fill. It is also important to elaborate the *resources of the customer* from this customer cycle which can add value on the same level as the company. Donald Normann [56] and his work with emotional design, describes that long-lasting emotional feelings (memories) take time to develop, and they come through sustained interactions [34, 64], which are important to see as a process of co-creation between the customer and company [9, 16, 19, 36]. The value creating activities are not only a process within the company; co-creation experiences are a new paradigm of value creation [9, 19, 56]. It is possible to see some interlinks and opportunities between the customer, the company and other actors within the *value system* if we also un-bundle the other actors` activities needed to configure, offer, exchange or perceive value propositions, as done in Figure 5.2, in the IKEA example.

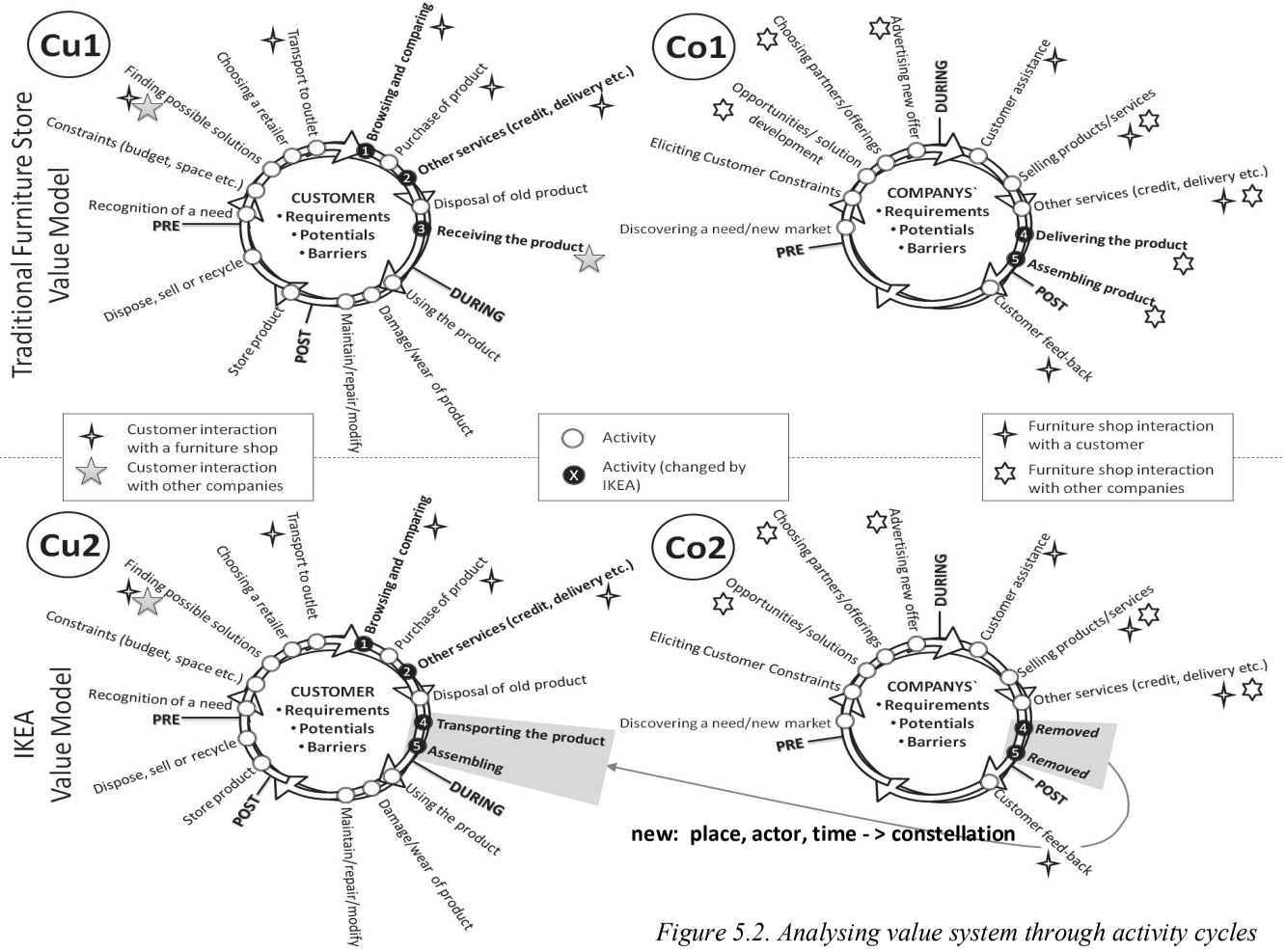

Figure 5.2. Analysing value system through activity cycles

In figure 5.2 it is illustrated what the customer activities are that are needed to purchase a product (traditional furniture shop Cu1 compared with IKEA furniture shop Cu2) and how these activities are complemented by companies' activities or delegated to other actors within the system (traditional furniture shop Co1 compared with IKEA furniture shop Co2). Different stars in the models show interactions between different actors within a system. By connecting the actors, value creating system transforms from being a value star into a value network. From the figure it is clear that IKEA's innovative business model is based around the migration of the transportation and assembly activities from the company and its associated actors, to the customer. This is not to say that this is the sole reason for IKEA's success, as this strategy is heavily supported by the great product design and development work that enable the users to feasibly undertake these activities. Thus the descriptive model shown in figure 5.2 helps to lay out the value associated activities in a supply chain. The model can be used to identify and explore a number of different opportunities in terms or reconfiguring the company's *value system*.

In order to create Value Activity Cycles:

- Determine actors within the *value system* that participate in value creation, exchange, transaction or use process.
- Write down all activities that are being performed by different actors before, during and after contractual bond (or purchase)
- Intuitively add actors in the analysis process, when needed
- Use different marks (star shapes) to show interactions between different actors within a system (who signs a contract with whom etc.). By connecting the actors, a value network appears.

5.1.2 Stage 2: Value Analysing Matrix

Value Analysing Matrix is based on a theory formed from data, driven from Descriptive Study 1 and 2, where it has been concluded that a value centric company is constantly trying to make sense of their customers`, partners` and suppliers` decision making backgrounds (Chapter 4). In order to make potential interlinks within a system more clear, it is beneficial to analyse actors` activities within activity cycles from 3 perspectives:

- Why the actors are acting like that? (their needs and wants),
- Can they act differently? (their potential, resources) and
- Why don`t/can't they act differently? (their barriers, restrictions).

To do this, the Value Analysing Matrix (VAM) from an activity perspective is proposed (Table 5.1). This matrix shall be filled in for every activity within the *value system*. In order to illustrate this method, 3 activities from the previous example Figure 5.2 have been analysed from a traditional furniture shop point of view (activities number 4 and 5 from the activity cycles, marked with black bullets).

Table 5.1. Value analysing matrix from an activity perspective

Activity No. 4: product transportation	**Customer**	**Furniture shop**	**Transport company**
Needs, wants	Wants transportation service to be precise, in time. Service provider should to be polite, have clean shoes. Service needs to be at low price and fast.	Service can enhance customer experience and therefore potentially form long-term customer relationship/ base.	Wants more customers and higher prices. Wants to save money by optimising transportation routes.
Potential, resources	Has a car, could transport the product himself. Man power/resources through friends to carry and drive.	We can start our own transportation service business.	We can only start working for a furniture shop, if we make a contract for a long enough period and good enough fixed prices.
Barriers, restrictions	Does not have a car or the car is too small to hold and thereby transport the product.	This business is not as profitable as our core business - selling goods.	Sometimes we cannot deliver goods fast enough, because we try to optimise our routes, or the addresses given by the furniture shop are not valid.
Activity No. 5: product assembly	**Customer**	**Furniture shop**	**Assembly company**
Needs, wants	Wants product to be assembled correctly and not damage the apartment when carried inside.	In order to reduce storage space, products must be stored before being assembled.	Wants to assemble the furniture at the manufacturing factory- it is easier like that, no need to carry tools.
Potential, resources	Could find some time to assemble the product. Would like to improve home environment by himself. Has friends, who can help if needed.	Could assemble the products at shop right after purchase. Could start our own assembly service business.	Could only start working for furniture shop, if we make a contract for a long enough period and good enough fixed prices.
Barriers, restrictions	It is difficult to assemble products by himself because instructions are complicated, assembling requires special tools.	This business is not as profitable as our core business - selling goods.	-

When the company has discovered all these 3 perspectives for all the activities and actors within a system, it is more likely to see the "big picture" about the situations the customers, itself and other actors within a system are in. It is now possible to see potential interlinks for value co-creation, sharing, transaction and find ways to overcome barriers within a system.

In order to fill in the Value Analysing Matrix:

- Determine which actors participate in each activity and fill in column names (for different activities, different actors can be chosen)
- Fill in matrix. Colour coding can be used in order to make further data processing easier.

5.1.3 Stage 3: analysing possible changes and their impact

From stages 1 and 2, a company can identify some potential changes in the *value system*. Analysis of the impact of each possible change is now needed (Table 5.2):

- What precisely can be changed within a *value system*?
- What are the expected benefits of the change?
- What are the expected dangers of the change?

At stage three, another matrix is being used for this analysis. In order to cluster similar ideas in the matrix, colour coding is suggested.

Table 5.2: A matrix for analysing the impact of each change

Activity	What can be changed in a value system?	Benefits of a change	Dangers of a change
1. **Product Design**: (opportunity for raising value co-creation and system efficiency)	• Company B can be included in Product Design stage for some practical optimisation advice • Also for developing new principal solutions to the client	• Reduced price of a product • Reduced delivery times • Developed new principal solutions • Full responsibility of the product is on Company B (design, materials, production)	• Designing phase could be longer • Customers will need to bring Company B and End User together - danger of being left out from the system.Customers will need to think what their CORE BUSINESS is. Is it designing?
2. **Bidding: (price, money-flow, schedule...)** (opportunity for system efficiency raise)	• Agile responding programme for bidding between Customer and its partners (price, money-flow, schedule, included services etc.) • Production volume booking commission fee (early booking gives certain discount, but commission fee will not be refunded) • First prepayment from the Client is small and symbolic (just to book the production volumes and start the project). First prepayment for materials will be asked later (this optimises Clients' money-flow)	• Fast collaboration in bidding between Customers and its partners • Optimised money-flows for the End User and contracts signed earlier • Early and reliable Masterplan fill-up (thanks to commission fee and discount)	• End User will need to divide and sign contracts earlier (greater uncertainty)

5.1.4 Stage 4: summarising results of the whole analysis

In the final stage of the value centric business analysing method, results of the analysis are being summarised and presented (Figure 5.4):

- What changes should a company consider?
- How to implement the changes and prevent unwanted impacts?
- What does every stakeholder win from the change?

Results of the analysis

1. **Practical product design**
   a. Company B can be included in the Product Design phase for some practical advice. Some of the current designs are impractical (difficult to manufacture, inpractical raw material selection etc.) By considering Company B's suggestions, developed design can reduce production and product price and delivery-times.
   b. Also for developing new principal solutions to the client. Product Designers often choose principal solutions for new products from their databases. New practical ideas could be appreciated in developing better principal solutions.
   c. Optimised product design. Design, where it is possible to choose alternative materials, production processes and technological order could save money and time. In the case of a machinery failure or project planning error, it is possible to choose another technological path or material.

Company B wins: wider selection of materials, production processes and technological paths to choose from - efficiency raise, cost reduction, risk management. Profit from the design works.

Customer wins: Product prices will reduce, risk of late deliveries reduces, good collaboration with Company B could lead to other beneficial development projects (visual real-time project management report for example).

End User wins: Prices can be reduced, risk of late deliveries reduces.

Figure 5.4: Results of the whole value centric business analysis

After completing the final stage of a value centric business analysis, a company is able to see the "big picture" and deeply understand its customers, partners and other stakeholders. Instead of being analytical, the final stage is rather *synthetic*, combining all previous findings and ideas together, enabling one to broaden the solution space and understand reasons behind events. This method does not attempt to give a company any solid suggestions. Rather it helps a manager to *synthesise* new highly perspective ideas by analysing a company's *value system* from different angles. Based on this systemised information, proactive decisions can be made.

In order to summarise the results of analysis:

- Write down codes that appeared from previous stages
- Summarise what can be changed together with the benefits and dangers for each particular idea
- Write down what each actor within the *value system* wins with those changes

5.2 Applying value centric business analysing method on case companies

The developed value-centric business development method consists of four stages [2]:

1. Creating value activity cycles -
    a. what activities every party within a *value system* need to go through in order to create, transact or use value
2. Filling in value analysing matrix - describing all activities from 3 perspectives, for every party involved -
    a. why the actors are acting in such a way (their needs and wants),
    b. can they act differently (potential, resources), and
    c. why don't they act differently (barriers, restrictions).
3. Analysis of the effects of possible changes within the *value system* -
    a. what can be changed,
    b. what are the expected results of the change,
    c. what are the possible risks of the change.
4. Summarising results of analysis -
    a. How different parties benefit from each potential change,
    b. What to consider when implementing a change.

Value Activity Cycles make it possible to see some un-seen interlinks, opportunities and barriers between the actors of the *value system*. Analysing this model with the help of the Value Analysing Matrix from the activity perspective, helps companies to see the big picture about the situations the customers, itself and other actors go through. Analysis of the effects of possible changes within the *value system* help to foresee benefits and risks of possible changes. By describing the big picture about the situations, the customers, the company itself and other actors within a system, it is possible to see potential interlinks for value co-creation, sharing, transaction and find ways to overcome barriers within a system [2]. The final, summarising stage of the analysis helps to bring all forms of understanding and ideas together, also bringing out expected benefits for each actor regarding each change.

The method has been applied on four different case companies (Table 5.3).

Table 5.3: Overview of Case Companies, where the value-centric business development method has been tested

	Company B	**Company C**	**Company D**	**Company E**
No. of workers	250 workers	50 workers	50 workers	50 workers
Field	Machine building	Production	Production	Engineering
Example of products	• Heavy cranes • Platforms for oil rigs • Other XXL products	• Metal parts and assemblies for Mother company. • Some sub-contracting activities	• Elevators • Other similar products	• Drawings • Preliminary calculations • Engineering services
Close relationships with	• Head contractors • Sub-contractors of Company B	• Mother-company • Sub-contractors of company C • Innovation-partners	• Clients • Sub-contractors	• Mother Company, • International clients

As it was difficult at first to find companies to test the method on, the amount of time the companies need to invest in analysing their business has been reduced. The research has been conducted according to the table-tennis principle - researchers created a draft of one stage of analysis and sent it to the case company for reviewing (Figure 5.5). Case company improved and corrected the draft and sent it back to the research team etc. After proposing such a working principle, the companies agreed to participate in our research easily.

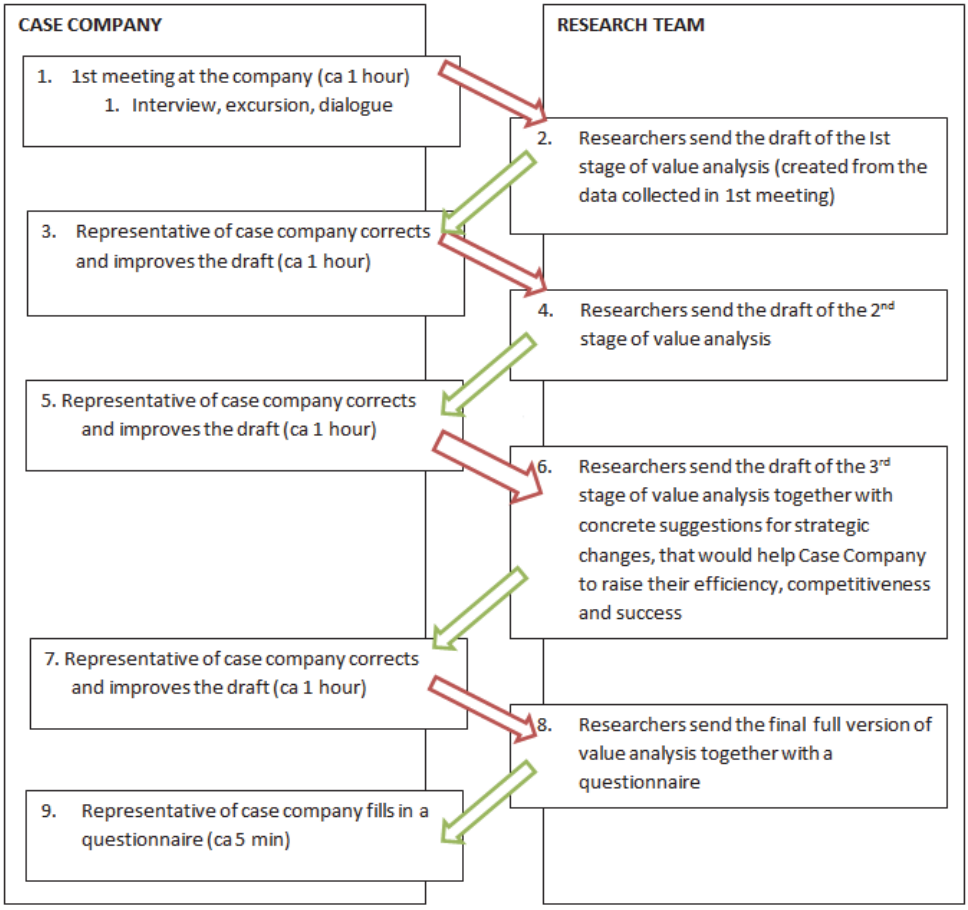

Figure 5.5: Principal process of the testing phase

5.2.1 Feedback from Case Companies

Companies were quite happy to participate in value centric business development analysing research. They were open to giving input to our research and replied regarding the research draft within 2-3 days (this might indicate their belief in the method). Based on information gathered from meetings with company representatives, and feedback gained after going through continuous steps of our analysis, a value centric model of their businesses was created and some changes suggested. In order to get feedback on the method, representatives were asked to answer Questionnaire 1. The organised results of Questionnaire 1 are presented in table 5.4.

Table 5.4: Results from questionnaire 1

	Company B			Company C			Company D			Company E		
	YES	**No changes**	**NO**	**YES**	**No changes**	**NO**	**YES**	**No changes**	**NO**	**YES**	**No changes**	**NO**
After analysing company value system with our method, the Company knows what actions its clients perform BEFORE perceiving their product or service.		x			x		x				x	
After analysing company value system with our method, the Company knows what actions its clients perform DURING perceiving their product or service.	x			x			x				x	
After analysing company value system with our method, the Company knows what actions its clients perform AFTER perceiving their product or service.		x			x			x			x	
After analysing company value system with our method, the Company knows what its clients and partners NEED and WANT.	x			x			x				x	
After analysing company value system with our method, the Company knows its clients` and partners` RESOURCES and POTENTIAL (material, technological, intellectual, timely etc.).		x		x			x				x	

After analysing company value system with our method, the Company knows its clients` and partners` BARRIERS and RESTRICTIONS. (What makes it difficult for their clients and partners to act).		x		x			x				x	
After analysing company value system with our method, the Company knows how to create offers and propositions, that are in harmony with clients` and partners` values and processes.	x			x			x				x	

Analysing Company value system with our method helps the Company to see the "BIG PICTURE".	x			x			x				x	
After analysing Company value system, the Company understands its OPPORTUNITIES better.	x			x			x				x	
After analysing Company value system, the Company understands its RISKS better.	x			x			x				x	
After analysing Company value system, the Company understands its BUSINESS MODEL better.		x		x			x				x	
After analysing Company value system, the Company understands its POTENTIAL for development and next steps to take.	x			x			x				x	

	YES	Rather Yes/No	NO	YES	Rather Yes/No	NO	YES	Rather Yes/No	NO	YES	Rather Yes/ No	NO
Analysing Company value system with our "Value Activity Cycle" method was EASY.	x			x			x				**Rather Yes**	
Analysing Company value system with our "Value Activity Cycle" method was USEFUL.	x			x			x				**Rather No**	

Feedback data from questionnaires suggests that the method is perceived to be rather:

- Easy to use
- Useful
- Helpful in understanding what
    - actions clients perform DURING perceiving product or service.
    - clients and partners NEED and WANT.
    - RESOURCES and POTENTIALS its clients and partners have
    - BARRIERS and RESTRICTIONS its clients and partners have (What makes it difficult to act).
    - The “BIG PICTURE”
- After analysing the Company *value system*, the Company understands its
    - OPPORTUNITIES better.
    - RISKS better.
    - BUSINESS MODEL better.
    - POTENTIAL for development and next steps to take
    - how to create offers and propositions, that are in harmony with clients` and partners` values and processes.

Going through the method took on average 3.5 hours of time from the Company’s representatives and 14 hours of time from the research team, which is perceived to be an acceptable and worthwhile investment of time [4].

Most negative feedback was returned from Company E. In order to find out if this feedback is relevant and if Company E really did not get any benefits from the value centric business analysing method, the research team decided to continue research and prepared another questionnaire, to be filled in by 10 other people from the same case companies. Feedback was gathered for every idea and suggestions derived from value centric business analysis. 40 questionnaires were sent out (10 for each case company) and 15 were received back (5 from Case Company B, 7 from Case Company C, 0 from Case Company D and 3 from Case Company E). Respondents were asked whether they perceived ideas derived from value centric business analysis as “good” or “bad” and whether

they had had the same ideas before. A little fragment of Case Company B's questionnaire 2 is shown in figure 5.6.

Tallinn University of Technology research on „Value centric manufacturing business model development"

Case Company B participated in research conducted by doctoral student Merili Randmaa, Tallinn University of Technology.

In our research we analysed Case Company B`s current business model and tried to find ways how to achieve:

- Efficiency and better use of resources
- Competitive advantage
- Closer customer relationships

After analysing Case Company B`s value system and business model, following suggestions were made:

		This suggestion is good? YES/NO	I have had the same ideas? YES/NO
In order to make better use of vacancies	**Forecasting worker`s workload** (by teamleaders) allows to make flexible weekly and monthly plans. Worker`s „Free time" can be filled with developing tasks and exercises		
	Forecasting machinery vacancies helps to assure effectiveness (macinery rental, production workers **training program**, subcontracting)		
Employees of a growing and developing company need to develop as well	When workloads are low, then: • Workshops by co-workers (practical tips) • Competitions (on speed, quality, creativity etc.) • Handicraft minutes		
	New innovative machines and production lines require **operators**. From Norcar personell development programmes, perspective workers can be noticed (whom to invest time and money).		
	Handicraft made by Norcar employees can be given away to Mother company`s customers as a **gift**.		
	Norcar and its Mother company can **cooperate with the personell development program** (study trips to Mother company etc.). It is also possible to form a joint development program with Moter company.		

Figure 5.6: A small fraction from questionnaire 2 for Case Company B

Case Company B got 7 principal suggestions out of our research. How they answered to the questionnaire, is shown in Figure 5.7. It appears that

- 20% of suggestions were perceived as "bad"
- 34.3% of suggestions were perceived as "good", and responders have had the same ideas before
- 45.7% of ideas were perceived as "good" and responders have not had similar ideas before (therefore these ideas are perceived to be "good" and "out of the box")

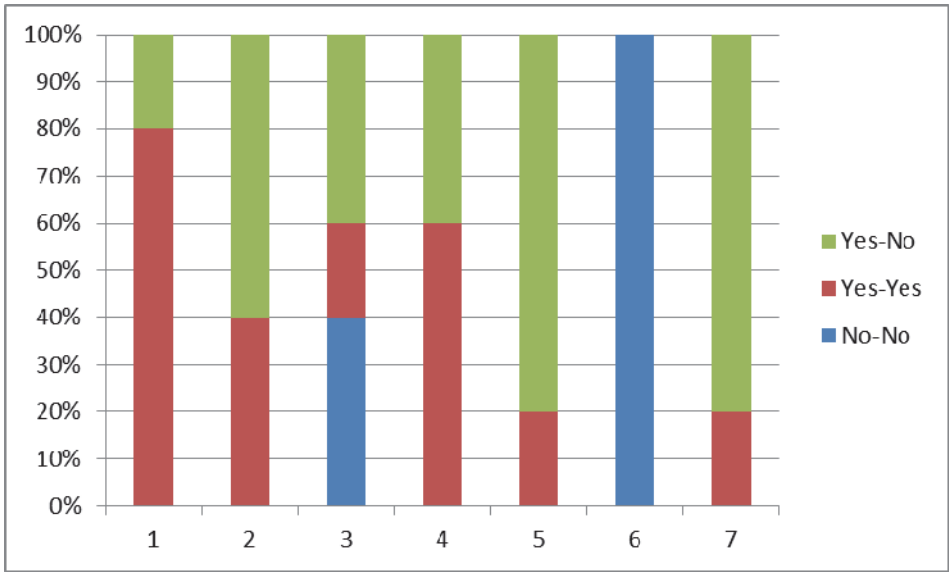

Figure 5.7: Questionnaire results from Case Company B

Case Company C got 9 principal suggestions from our research. How they answered to the questionnaire, is shown in Figure 5.8. It appears that:

- 14.3% of suggestions were perceived as "bad"
- 49.2% of suggestions were perceived as "good", and responders have had the same ideas before
- 36.5% of ideas were perceived as "good" and responders have not had similar ideas before (therefore these ideas are perceived to be "good" and "out of the box")

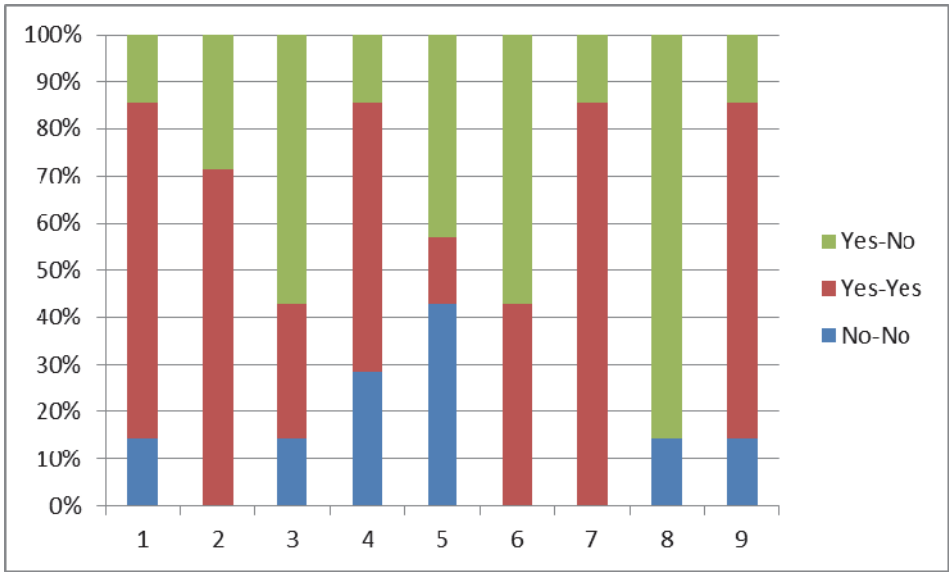

Figure 5.8: Questionnaire results from Case Company C

We were not able to get answers from ***Case Company D***.

Case Company E got 33 suggestions from our research. How they answered to the questionnaire, is shown in Figure 5.9. It appears that

- 3.2% of suggestions were perceived as "bad"
- 69.9% of suggestions were perceived as "good", and responders have had the same ideas before
- 26.9% of ideas were perceived as good and responders have not had similar ideas before (therefore these ideas are perceived as "good" and "out of the box")

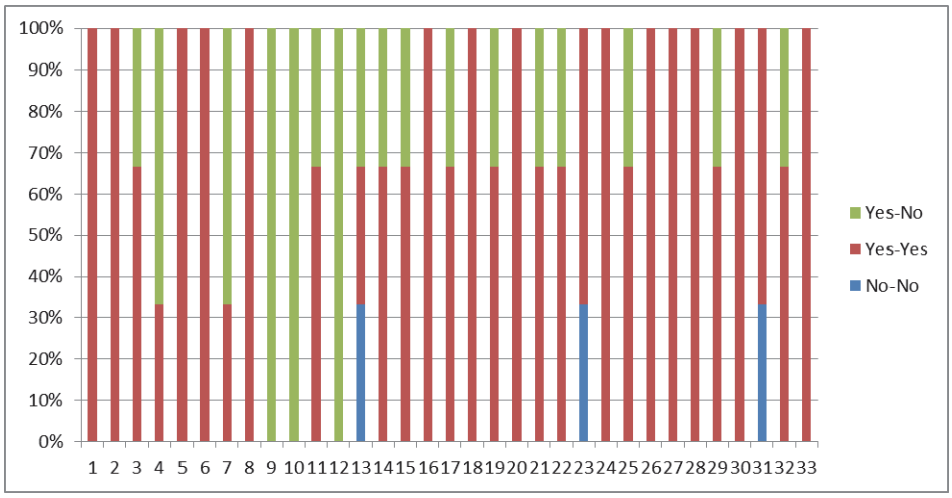

Figure 5.9: Questionnaire results from Case Company E

On average:

- 9.6% of suggestions were perceived as "bad"
- 57.9% of suggestions were perceived as "good", and responders have had the same ideas before
- 32.5% of ideas were perceived as good and responders have not had similar ideas before (therefore these ideas are "good" and "out of the box")

GENERAL CONCLUSIONS

In this research, a *value system* is understood as a set of interactions (exploited and also unexploited) that can potentially create value. Almost every value has a number of possessors and a number of actors within a system, who have a need or desire for some of those values (potential receivers). Possessors and actors attract each other as +/- magnets. In the *value system*, some values can be hidden or unnoticed, some can be unevenly distributed etc. There is often some unused potential.

Proactivity has three key attributes: it is *self-starting*, *change orientated* and *future focused*. In order to be proactive, one must have *synthesised* and analysed a large amount of information and experience. As strategic decisions must be made under time pressure, decision makers seldom have time to analyse all data and they need to rely on their intuition.

Based on Descriptive Study 1 and 2, it can be said that a proactive value centric business is:

- constantly trying to make sense of their customers`, partners` and suppliers` decision making backgrounds
    - Why are the actors acting like that? (their needs and wants),
    - Can they act differently? (their potential, resources) and
    - Why don`t/can`t they act differently? (their barriers, restrictions);
- constantly trying to notice and use any unused potential within its *value system*.

In the prescriptive phase of the research a method has been created to help companies to analyse their *value system* and notice ways to develop it, to raise added value, use resources more effectively and find new business opportunities. Value centric business development method consists of four stages:

1. Creating Value Activity Cycles
2. Filling in the Value Analysing Matrix
3. Analysis of the effects of possible changes within the *value system*
4. Summarising results of analysis

Value Activity Cycles make it possible to see some un-seen interlinks, opportunities and barriers between the customer and the company. Analysing this model of the company's *value system* with the help of the Value Analysing Matrix from an activity perspective, helps companies to see the "big picture" about the situations the customers, itself and other actors go through. Analysis of the effects of possible changes within the *value system* help to foresee benefits and risks of possible changes. By describing the big picture about the situations, the customers, the company itself and other actors within a system, it

is possible to see potential interlinks for value co-creation, sharing, transaction and find ways to overcome barriers within a system.

The method has been applied on four case companies and feedback has been gathered on two different levels. Questionnaire 1 results show that the method was perceived to be rather:

- Easy to use
- Useful
- Helpful in understanding what
    - actions clients perform DURING perceiving product or service.
    - clients and partners NEED and WANT.
    - RESOURCES and POTENTIAL its clients and partners have
    - BARRIERS and RESTRICTIONS its clients and partners have (What makes it difficult to act).
    - The "BIG PICTURE"
- After analysing the Company *value system*, the Company understands its
    - OPPORTUNITIES better.
    - RISKS better.
    - BUSINESS MODEL better.
    - POTENTIAL for development and next steps to take
    - how to create offers and propositions, that are in harmony with clients` and partners` values and processes.

Questionnaires 2 show that on average:

- 9.6% of suggestions derived from value centric business analysing methodology were perceived as "bad"
- 57.9% of suggestions were perceived as "good", and responders have had the same ideas before
- 32.5% of ideas were perceived as "good" and responders have not had similar ideas before (therefore these ideas are "good" and "out of the box")

It can be said that the developed *value system* analysing method is prospective - it is easy to use, helps companies to understand their *value system* and is able to develop some good "out of the box" ideas. This method might be a good start for manufacturing companies to start developing their business model, to become more value centric and competitive.

Contribution of the thesis includes opening up and developing further theoretical fields of servitization of manufacturing, Value Networks, strategic management etc. In this thesis it is proposed that there may be some major opportunities for Estonian manufacturing companies to apply new fundamental strategies, which have been tested and proven to be effective in successful companies throughout the world. This thesis contributes to:

- **the shift towards value centric thinking** by opening up some new perspectives for understanding the *value system* and noticing new

product, service and business model development potential (Chapters 1, 2 and 3);

- **proposes a specification of a proactive value centric business** by constructing a theory using the Grounded Theory Method and data from Descriptive Studies 1 and 2 (Chapter 4).
- **business development methodologies** by creating a value centric business development method for analysing manufacturing enterprises and synthesising new value centric business models (Chapter 5). The created method helps companies to find ways to:
  - Raise efficiency (resources, management, marketing, logistics etc.),
  - Raise *added value* for the customer,
  - Increase co-operation between different parties within the *value system*,
  - Develop and update their business models;

This research, is in general characterised as Action Research (AR), where ongoing actions are being studied in their natural setting while being included in actions and processes of organisations that are being studied. Although AR has a relatively free structure, the quality of the research is evaluated based on the following validity criteria (Table 1.5).

Table 2.5: Goals of Action Research, quality criterias and results of the research [61]

Goals of Action Research	**Quality/Validity Criteria**	**Results of the research**
1) The generation of new knowledge	Dialogic and process validity (peer review of research)	Research results have been presented and accepted in various peer-reviewed conferences.
2) The achievement of action-orientated outcomes	Outcome validity (successful outcome of the research project)	Created method seems to have potential in developing Estonian manufacturing SME business models to be more value centric (based on preliminary method testing results).
3) The education of both researcher and participants	Catalytic validity (the degree to which the research process reorientates participants in order to transform it)	It is evident that the researcher of this project learned much from Descriptive Study 1 and 2 - the proposed specification and method created based on Descriptive Study results seem to hold value and be applicable in practice Descriptive Study 3 suggests that participants of the research gained a deeper understanding about their business environment and unused potential of their business model.
4) Results that are relevant to the local setting	Democratic validity (how are multiple perspectives taken into account?)	This research takes into account global changes in the economic environment as well as local peculiarities. Descriptive Study 1 has been done in the Estonian case company whereas Descriptive Study 2 analyses successful business models from abroad.

5) A sound and appropriate research methodology	Process validity	Research process and methodologies seem to be appropriate as the research has contributed to theoretical as well as practical knowledge.

Limitations of the research mainly include subjectivity in the testing phase (Chapter 5). As it was difficult at first to find companies to test the method on, the amount of time the companies need to invest in analysing their business had to be reduced. The method testing has been conducted according to the table-tennis principle - researchers created a draft of one stage of analysis and sent it to the case company for review. Case company improved and corrected the draft and sent it back to research team etc. After proposing such a working principle, the companies agreed to participate in our research readily. It may be possible that the expertise of the research team is partially behind good testing results, although the research team claims that they had no idea in the beginning of the analysis process, where the analysis would end up eventually. They claim that the analysis process opened new ideas and further suggestions that could not be predicted before. Method needs to be tested in a more objective way.

Further research needs to be done on the testing phase. Also, the value centric business model development method needs to be developed to be more user friendly.

Although this method is developed for small and medium sized manufacturing companies, it is possible that the method also works well for companies from other fields. It is also interesting to test this hypothesis.

SUMMARY

Value Centric Business Development Method for Estonian Manufacturing SMEs

This research proposes a new approach to business development that gives possibilities to analyse the current *value system* from different perspectives and synthesise new value centric models.

Based on Descriptive Study 1 (Action research within Case Company A) and Descriptive Study 2 (literature analysis and case analysis on a literature basis), a specification of a proactive value centric business has been proposed (using the Grounded Theory Method). A proactive value centric business is:

- constantly trying to make sense of their customers`, partners` and suppliers` decision making backgrounds
    - Why are the actors acting like that? (their needs and wants),
    - Can they act differently? (their potential, resources) and
    - Why don`t/can`t they act differently? (their barriers, restrictions);
- Constantly trying to notice and use any unused potential within its *value system*.

By describing the "big picture" about the situations that the customers, the company itself and other actors within a system are going through, it is possible to see ways to increase system efficiency as well as customer value.

In this research, a method that would facilitate companies to analyse their *value system* and help them to gain new insights for raising added value, better use of resources and new business opportunities has been created. The method has been applied in case companies and feedback from questionnaires suggests that the method is easy and useful. Companies gained a better understanding of their clients and partners, and know-how for creating offers that are in harmony with their clients' and partners' values and processes. The method helped them to understand the "big picture" and discover development opportunities as well as potential risks. From a practical point of view, the method helped companies to understand its development potential to a deeper level and know what steps to take next. The method is able to develop some good "out of the box" ideas (in our research, 90.4 % of the ideas were perceived as "good" and 32.5% of the ideas were perceived as "good" and "new"). The method might be a good start for Estonian manufacturing companies to start developing their business models, to be more value centric and competitive.

KOKKUVÕTE

Väärtuskeskne ärimudeli arendamise meetod Eesti väikese ja keskmise suurusega tootmisettevõtetele.

Selles uurimistöös on uuritud ja anlüüsitud majandussüsteemi arengu põhjuseid ning võimalikke tulevikusuundumusi. Võib väita, et majandussüsteem liigub teenuse tööstuse suunas, kus ka tootmisettevõtted peavad muutma enda äri- ja juhtimismudeleid. Väitekirjas analüüsitakse neid muudatusi Eesti tootmisettevõtetes ning pakutakse välja metoodika, mis aitab neil endi ärimudeleid arendada, saavutamaks parem sobivus ja konkurentsieelis tulevikus.

Uurimistöö jooksul koguti materjali kirjandusest ja kogemusi juhtum-ettevõtetest. Andmeid, kogemusi ja kujunevat teooriat töödeldi põhistatud teooria meetodi alusel (GTM) ning lõpuks formuleeriti proaktiivse väärtuskeskse ettevõtte teooria. Proaktiivne väärtuskeskne ettevõte:

- üritab igal hetkel mõista enda klientide, partnerite ja tarnijate otsuste tegemise taustasid
    - Miks nad käituvad nii? (nende vajadused ja soovid)
    - Kas nad võiks ka teistmoodi käituda? (nende potentsiaalid ja ressursid)
    - Miks nad ei saa käituda teisiti? (nende piirangud)
- Üritab märgata ja ära kasutada igat kasutamata potenstiaali väärtus-süsteemis.

Üritab mõista „suurt pilti“ enda klientide, iseenda ja partnerite tegevustest, et märgata võimalusi väärtussüsteemi efektiivsemaks muutmiseks ning kliendi väärtuse tõstmiseks.

Uurimistöö käigus on välja töötatud meetod, mis aitab ettevõtetel analüüsida oma väärtus-süsteemi ning leida uusi vaatenurki, kuidas tõsta lisandväärtust, kasutada paremini ressursse ja uusi ärilisi võimalusi. Meetodit on rakendatud ja testitud juhtum-ettevõtetes. Ettevõtete esindajad hindasid meetodit kui lihtsat ja kasulikku. Tänu sellele nad mõistavad paremini enda kliente ja partnereid ning teavad, kuidas luua pakkumisi, mis harmoniseeruks klientide ja partnerite väärtuste ja protsessidega. Meetod aitas ettevõtete juhtidel paremini mõista „suurt pilti“ ning leida arenguvõimalusi ning võimalikke ohtusid. Meetod on võimeline nähtavale tooma häid ja uusi ideid (meie uurimistöös 90,4% välja pakutud ideedest tajuti „headena“ ja 32,5% välja pakutud ideedest tajuti „headena“ ja „uutena“). Loodud meetood võib olla hea algus Eesti tootmisettevõtetele, alustamaks ärimudeli arendamist, et muutuda väärtuskesksemaks ja konkurentsivõimelisemaks.

Uurimistöö eesmärgiks oli aidata kaasa riiklikul tasemel püstitatud strateegiliste eesmärkide saavutamisele. Väitekirjas antakse Eesti

tootmisettevõtetele praktilised soovitused, kuidas arendada enda ärimudelit selleks, et:

- Tõsta ressursside kasutamise efektiivsust,
- Tõsta lisandväärtust enda klientide jaoks,
- Tõsta koostööd erinevate osapoolte vahel väärtus-süsteemis,
- Ärimudel oleks rohkem väärtuskeskne.

Tagasiside juhtumettevõtetest lubab väita, et uurimistöö on olnud tulemuslik, avardamaks Eesti tootmisettevõtete lahenduste välja ja loodud meetod on perspektiivne, arendamaks uudseid väärtuskeskseid ärimudeleid.

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List of Author's Publications

1. **M.Kukuškin**, T. Otto and T. Howard,"Value-centric business development: Descriptive and prescriptive research into five different companies," *Proceedings of the Estonian Academy of Sciences.* Accepted 12.08.2015.
2. **M. Randmaa** and T. Otto, "Value-centric business: an in-depth analysis of one case company," *Proceedings of the 9th International DAAAM Baltic Conference "Industrial Engineering" Tallinn (Estonia),* pp. 169-174. 2014.
3. **M. Randmaa,** T. Howard and T. Otto, "From product centered design to value centered design: understanding the value-system," *Proceedings of the 8th International Conference of DAAAM Baltic Industrial Engineering, Tallinn (Estonia),* pp. 548-554. 2012.
4. J. Lavin and **M. Randmaa**, "Relationships between business objectives and the actual outcome of the business," *Proceedings of the 8th International Conference of DAAAM Baltic Industrial Engineering, Tallinn (Estonia)*, pp. 512-517. 2012.
5. **M. Randmaa** and K. Sonk, "Virtual product developing environment in customer-centered design approach," *Proceedings of the 7th International Conference of DAAAM Baltic Industrial Engineering, Tallinn (Estonia),* pp. 72-78. 2010.

Other publications

6. **M. Randmaa,** K. Mougaard, T. Howard, and T.C. McAloone, "Rethinking value: a value-centric model of product, service and business development," *18th International Conference on Engineering Design (ICED11), Copenhagen (Denmark),* DS 68-11. 2011.
7. **M. Randmaa**, "Introducing proactive thinking in value alliance concept," *10th International Symposium Pärnu 2011"Topical Problems in the Field of Electrical and Power Engineering" and "Doctoral School of Energy and Geotechnology", Pärnu (Estonia*), pp. 218-223. 2011.
8. **M. Randmaa,** T. Otto and T. Howard, "Test Results of Practical Value Centric Business Development Methodology," *Proceedings of NordDesign 2014, Espoo (Finland),* pp. 642-651. 2014.
9. **M. Randmaa,** "Sustainable RFID rack assembly solution for mobile robot platform manufacturing," *8th International Symposium "Topical problems in the field of electrical and power engineering. Doctoral school of energy and geotechnology", Pärnu (Estonia),* pp. 198-201. 2010.
10. **M. Randmaa,** T. Otto and A. Kuusik, "RFID rack assembly development for mobile platform," *Annals of DAAAM for 2009 & Proceedings of the 2th International DAAAM Symposium. Vienna (Austria)*, pp. 1697-1698. 2009.

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Õppeasutus (nimetus lõpetamise ajal)	Lõpetamise aeg	Haridus (eriala/kraad)
Tallinna Tehnikaülikool	2009	Tootearendus ja tootmistehnika/ Tehnikateaduste magister
Tallinna Tehnikaülikool	2007	Tootearendus ja tootmistehnika/ Tehnikateaduste bakalaureus
Pärnu Raeküla Gümnaasium	2004	Gümnaasium
Audru Keskkool	2000	Algharidus

3. Keelteoskus (alg-, kesk- või kõrgtase)

Keel	Tase
Eesti keel	Kõrgtase
Inglise keel	Kõrgtase
Saksa keel	Kesktase

4. Teenistuskäik

Töötamise aeg	Tööandja nimetus	Ametikoht
2012 - …	Tallinna Tehnikaülikool; Mehaanika teaduskond, Masinaehituse instituut	Assistent
2012-...	Konsultatsioonifirma Kusaka	Juhataja
2012	Innovatsiooni ja arenduskeskus Mektory	Projektijuht
2010-2012	Ehitusfirma Morgander OÜ	Tegevdirektor
2008-2010	Tootmisettevõte Terg OÜ	Projektijuht
2008-2009	Purjespordikool Kalev	Purjetamise treener
2005-2008	Eesti Olümpiakoondis	Tipp-purjetaja

5. Teaduspreemiad ja -tunnustused

2012 Kõige aktiivseme osaleja 12. Rahvusvahelisel sümpoosionil "Topical Problems in the Field of Electrical and Power Engineering", Pärnu, Eesti
2011 Kristjan Jaagu stipendium

6. Teadustöö põhisuunad

Loodusteadused ja tehnika, Tootearenduse ja tootmistehnika alased uuringud, Masinaehitus

Curriculum Vitae

1. Personal data

   Name: Merili Kukuškin (maiden name Randmaa)
   Date and place of birth: 14.06.1985, Audru, Estonia
   E-mail: merili.kukushkin@ttu.ee

2. Education

Educational institution	Graduation year	Education (field of study/degree)
Tallinn University of Technology	2009	Product Development and Production Engineering / Master of Science
Tallinn University of Technology	2007	Product Development and Production Engineering/ Bachelor of Science
Pärnu Raeküla Gymnasium	2004	Gymnasium
Audru Primary School	2000	Primary Education

3. Language competence/skills (fluent; average, basic skills)

Language	Level
Estonian	Fluent
English	Fluent
German	Medium

4. Professional Employment

Period	Organisation	Position
2012 - …	Tallinn University of Technology, Faculty of Machining, Department of Mechanics	Assistant
2012-…	Consultation Company Kusaka	CEO
2012	Innovation and Development Centre Mektory	Project Manager
2010-2012	Construction Company Morgander	General Manager
2008-2010	Metalworking Company Terg	Project Manager

2008-2009	Sailing Instructor, Sailing School Kalev	Instructor
2005-2008	Member of Estonian Olympic Team	Olympic Team Member

5. Honours & Awards

2012 Most active participant at 12. International Symposium "Topical Problems in the Field of Electrical and Power Engineering", Pärnu, Estonia.
2011 Kristjan Jaak scholarship

6. Field of research

Natural Sciences and Engineering, Product Development and Production Engineering

DISSERTATIONS DEFENDED AT TALLINN UNIVERSITY OF TECHNOLOGY ON *MECHANICAL ENGINEERING*

1. **Jakob Kübarsepp**. Steel-Bonded Hardmetals. 1992.

2. **Jakub Kõo**. Determination of Residual Stresses in Coatings &Coated Parts. 1994.

3. **Mart Tamre**. Tribocharacteristics of Journal Bearings Unlocated Axis. 1995.

4. **Paul Kallas**. Abrasive Erosion of Powder Materials. 1996.

5. **Jüri Pirso**. Titanium and Chromium Carbide Based Cermets. 1996.

6. **Heinrich Reshetnyak**. Hard Metals Serviceability in Sheet Metal Forming Operations. 1996.

7. **Arvi Kruusing**. Magnetic Microdevices and Their Fabrication methods. 1997.

8. **Roberto Carmona Davila**. Some Contributions to the Quality Control in Motor Car Industry. 1999.

9. **Harri Annuka**. Characterization and Application of TiC-Based Iron Alloys Bonded Cermets. 1999.

10. **Irina Hussainova**. Investigation of Particle-Wall Collision and Erosion Prediction. 1999.

11. **Edi Kulderknup**. Reliability and Uncertainty of Quality Measurement. 2000.

12. **Vitali Podgurski**. Laser Ablation and Thermal Evaporation of Thin Films and Structures. 2001.

13. **Igor Penkov**. Strength Investigation of Threaded Joints Under Static and Dynamic Loading. 2001.

14. **Martin Eerme**. Structural Modelling of Engineering Products and Realisation of Computer-Based Environment for Product Development. 2001.

15. **Toivo Tähemaa**. Assurance of Synergy and Competitive Dependability at Non-Safety-Critical Mechatronics Systems design. 2002.

16. **Jüri Resev**. Virtual Differential as Torque Distribution Control Unit in Automotive Propulsion Systems. 2002.

17. **Toomas Pihl**. Powder Coatings for Abrasive Wear. 2002.

18. **Sergei Letunovitš**. Tribology of Fine-Grained Cermets. 2003.

19. **Tatyana Karaulova**. Development of the Modelling Tool for the Analysis of the Production Process and its Entities for the SME. 2004.

20. **Grigori Nekrassov**. Development of an Intelligent Integrated Environment for Computer. 2004.

21. **Sergei Zimakov**. Novel Wear Resistant WC-Based Thermal Sprayed Coatings. 2004.

22. **Irina Preis**. Fatigue Performance and Mechanical Reliability of Cemented Carbides. 2004.

23. **Medhat Hussainov**. Effect of Solid Particles on Turbulence of Gas in Two-Phase Flows. 2005.

24. **Frid Kaljas**. Synergy-Based Approach to Design of the Interdisciplinary Systems. 2005.

25. **Dmitri Neshumayev**. Experimental and Numerical Investigation of Combined Heat Transfer Enhancement Technique in Gas-Heated Channels. 2005.

26. **Renno Veinthal**. Characterization and Modelling of Erosion Wear of Powder Composite Materials and Coatings. 2005.

27. **Sergei Tisler**. Deposition of Solid Particles from Aerosol Flow in Laminar Flat-Plate Boundary Layer. 2006.

28. **Tauno Otto**. Models for Monitoring of Technological Processes and Production Systems. 2006.

29. **Maksim Antonov**. Assessment of Cermets Performance in Aggressive Media. 2006.

30. **Tatjana Barashkova**. Research of the Effect of Correlation at the Measurement of Alternating Voltage. 2006.

31. **Jaan Kers**. Recycling of Composite Plastics. 2006.

32. **Raivo Sell**. Model Based Mechatronic Systems Modeling Methodology in Conceptual Design Stage. 2007.

33. **Hans Rämmal**. Experimental Methods for Sound Propagation Studies in Automotive Duct Systems. 2007.

34. **Meelis Pohlak**. Rapid Prototyping of Sheet Metal Components with Incremental Sheet Forming Technology. 2007.

35. **Priidu Peetsalu**. Microstructural Aspects of Thermal Sprayed WC-Co Coatings and Ni-Cr Coated Steels. 2007.

36. **Lauri Kollo**. Sinter/HIP Technology of TiC-Based Cermets. 2007.

37. **Andrei Dedov**. Assessment of Metal Condition and Remaining Life of In-service Power Plant Components Operating at High Temperature. 2007.

38. **Fjodor Sergejev**. Investigation of the Fatigue Mechanics Aspects of PM Hardmetals and Cermets. 2007.

39. **Eduard Ševtšenko**. Intelligent Decision Support System for the Network of Collaborative SME-s. 2007.

40. **Rünno Lumiste**. Networks and Innovation in Machinery and Electronics Industry and Enterprises (Estonian Case Studies). 2008.

41. **Kristo Karjust**. Integrated Product Development and Production Technology of Large Composite Plastic Products. 2008.

42. **Mart Saarna**. Fatigue Characteristics of PM Steels. 2008.

43. **Eduard Kimmari**. Exothermically Synthesized B_4C-Al Composites for Dry Sliding. 2008.

44. **Indrek Abiline**. Calibration Methods of Coating Thickness Gauges. 2008.

45. **Tiit Hindreus**. Synergy-Based Approach to Quality Assurance. 2009.

46. **Karl Raba**. Uncertainty Focused Product Improvement Models. 2009.

47. **Riho Tarbe**. Abrasive Impact Wear: Tester, Wear and Grindability Studies. 2009.

48. **Kristjan Juhani**. Reactive Sintered Chromium and Titanium Carbide-Based Cermets. 2009.

49. **Nadežda Dementjeva**. Energy Planning Model Analysis and Their Adaptability for Estonian Energy Sector. 2009.

50. **Igor Krupenski**. Numerical Simulation of Two-Phase Turbulent Flows in Ash Circulating Fluidized Bed. 2010.

51. **Aleksandr Hlebnikov**. The Analysis of Efficiency and Optimization of District Heating Networks in Estonia. 2010.

52. **Andres Petritšenko**. Vibration of Ladder Frames. 2010.

53. **Renee Joost**. Novel Methods for Hardmetal Production and Recycling. 2010.

54. **Andre Gregor**. Hard PVD Coatings for Tooling. 2010.

55. **Tõnu Roosaar**. Wear Performance of WC- and TiC-Based Ceramic-Metallic Composites. 2010.

56. **Alina Sivitski**. Sliding Wear of PVD Hard Coatings: Fatigue and Measurement Aspects. 2010.

57. **Sergei Kramanenko**. Fractal Approach for Multiple Project Management in Manufacturing Enterprises. 2010.

58. **Eduard Latõsov**. Model for the Analysis of Combined Heat and Power Production. 2011.

59. **Jürgen Riim**. Calibration Methods of Coating Thickness Standards. 2011.

60. **Andrei Surzhenkov**. Duplex Treatment of Steel Surface. 2011.

61. **Steffen Dahms**. Diffusion Welding of Different Materials. 2011.

62. **Birthe Matsi**. Research of Innovation Capasity Monitoring Methodology for Engineering Industry. 2011.

63. **Peeter Ross**. Data Sharing and Shared Workflow in Medical Imaging. 2011.

64. **Siim Link**. Reactivity of Woody and Herbaceous Biomass Chars. 2011.

65. **Kristjan Plamus**. The Impact of Oil Shale Calorific Value on CFB Boiler Thermal Efficiency and Environment. 2012.

66. **Aleksei Tšinjan**. Performance of Tool Materials in Blanking. 2012.

67. **Martinš Sarkans**. Synergy Deployment at Early Evaluation of Modularity of the Multi-Agent Production Systems. 2012.

68. **Sven Seiler**. Laboratory as a Service – A Holistic Framework for Remote and Virtual Labs. 2012.

69. **Tarmo Velsker**. Design Optimization of Steel and Glass Structures. 2012.

70. **Madis Tiik**. Access Rights and Organizational Management in Implementation of Estonian Electronic Health Record System. 2012.

71. **Marina Kostina**. Reliability Management of Manufacturing Processes in Machinery Enterprises. 2012.

72. **Robert Hudjakov**. Long-Range Navigation for Unmanned Off-Road Ground Vehicle. 2012.

73. **Arkadi Zikin**. Advanced Multiphase Tribo-Functional PTA Hardfacings. 2013.

74. **Alar Konist**. Environmental Aspects of Oil Shale Power Production. 2013.

75. **Inge Roos**. Methodology for Calculating CO_2 Emissions from Estonian Shale Oil Industry. 2013.

76. **Dmitri Shvarts**. Global 3D Map Merging Methods for Robot Navigation. 2013.

77. **Kaia Lõun**. Company's Strategy Based Formation of e-Workplace Performance in the Engineering Industry. 2013.

78. **Maido Hiiemaa**. Motion Planner for Skid-Steer Unmanned Ground Vehicle. 2013.

79. **Dmitri Goljandin**. Disintegrator Milling System Development and Milling Technologies of Different Materials. 2013.

80. **Dmitri Aleksandrov**. Light-Weight Multicopter Structural Design for Energy Saving. 2013.

81. **Henrik Herranen**. Design Optimization of Smart Composite Structures with Embedded Devices. 2014.

82. **Heiki Tiikoja**. Experimental Acoustic Characterization of Automotive Inlet and Exhaust System. 2014.

83. **Jelena Priss**. High Temperature Corrosion and Abrasive Wear of Boiler Steels. 2014.

84. **Aare Aruniit**. Thermoreactive Polymer Composite with High Particulate Filler Content. 2014.

85. **Dmitri Gornostajev**. Development of the Calculation Method for Barge Hull. 2014.

86. **Liina Lind**. Wear of PVD Coatings on Fineblanking Punches. 2014.

87. **Nikolai Voltšihhin**. Design and Technology of Oxides-Containing Ceramic-Based Composites. 2014.

88. **Aleksander Šablinski**. RANS Numerical Modelling of Turbulent Polydispersed Flows in CFB Freeboard. 2015.

89. **Tanel Aruväli**. Wireless Real-time Monitoring of Machining Processes. 2015.

90. **Andrei Bogatov**. Morphological Changes on Diamond and DLC Films During Sliding Wear. 2015.

91. **Raimo Kabral**. Aero-Acoustic Studies and Innovative Noise Control with Application to Modern Automotive Gas Exchange System. 2015.

92. **Jevgeni Sahno**. Dynamic Management Framework for Continuous Improvement of Production Processes. 2015.