THE VALUE OF DESIGN RESEARCH

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STEPPING INTO THE FUTURE WITH DESIGN INTERVENTION

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ABSTRACT

The paper presents findings from ongoing research of the process by which SMEs benefit from design. The study describes how selected companies use design in their development work in a temporal context to construct value in their business. Furthermore the paper discusses how companies build the future for their business with the help of external design knowledge.

Twelve companies where selected into this study. Companies have different temporal goals for the design project and therefore the future aspect in the design work differs in each case. Some companies are aiming to improve the business in a short term, while some are more investing to long-term goals and futures business opportunities through design and continuous development process. Accordingly aims (conscious or unconscious) in these development projects have been to reach either incremental or radical steps into the future through design. The study shows how these different temporal goals have affected to the content of the design task and the outcome of the project. Furthermore temporality affects to the value creation through design. This study shows that the use of design in industry needs to be connected to temporal goals in the company's strategy. According to this study development work with designers can be seen as an opportunity to open futures views for innovation in industry.

Keywords: Temporality, Design Value, Visionary design

1 INTRODUCTION

Very often industry uses design with a narrow view for its instrumental purposes only, yet more strategic thinking is needed to use design as a strategic resource (Svengren 1997). What are the strategic value opportunities the use of design can open for industry? Borja de Mozota (2006) points out that design has four abilities and powers when contributing to value creation in enterprises. According to Borja de Mozota these powers can be linked to enterprises' focuses in a following way. Firstly design can create competitive *differentiation* when the company is focusing on markets. Secondly design can be *integrated* when the focus is on processes. Thirdly, according to Borja de Mozota design can *transform* business models and create new business opportunities when company's focus is on talent seeking. Finally design can contribute to *good business* through increasing sales or offering better return on investments, while the company's focus is on financial goals (ibid.).

According to the study by Bucolo and King (2014) design led innovation can *capture* value, in the form of a new business model and new ways to improve

effectiveness. Design begins to be an integrated part of the company's strategy and design can move away from the product design alone to more challenging tasks in company's strategy formulation. Design driven approach can be applied to all areas of the business, and therefore through design, the value can be captured in product design, manufacturing, in delivery and services (ibid.)

On the other hand Bucolo and King (2014) argue that technology based research and development work can focus on innovation, which *create* value for technological improvements and efficiency in production. Companies using this approach for innovation and value creation understand their customers' needs and their current markets and are at least locally competitive. On the other hand this approach tides the company to the past, the retrospective knowledge, while focusing to the development of the product into well-known markets. Also the risks of the development work are lower than in the first approach.

Cagan and Vogel (2002) explain that in the fuzzy front end of product design process creative concepting helps to identify and understand opportunities which then are selected and developed further. Through transition good ideas are detailed into product designs. This process needs both approaches: capturing value through creative concepting using qualitative methods (designing) and creating value through product refinements through quantitative methods (engineering). These authors argue that designers are more comfortable with uncertainty and open problems than engineers. "Engineers like to get specifics early while designers like to leave options open late" (ibid, 145). In this way designers can create and "construct" a vision of the future for the company, its business, products, use-situations and trends to come. Therefore the value aspect in design depends in which stage of the process it is used or what temporal goals the design task includes.

Carlopio (2010) sees the value of design and real success opportunity to lie, not in product design, but in generating strategy innovations and new business models. The real value of design exists in the capability of design led thinking to change radically the strategy of the company and while finding opportunities for new kind of value proposition (ibid.). This approach positions the value of design in creating the futures view for the company and linking the design use to the strategy formulation in the company. In addition this approach can link the use of design into transformation the business and industry.

This paper presents some preliminary findings from ongoing research of design integration in industry. This paper aims to open new understanding of the value creation through design in the context of temporality. Therefore the focus of this study is the design process, the design task and especially how the temporal dimension influences. In the focus of this paper is the questions, how development work done by designers can create value for the company in different temporal contexts.

The paper starts by constructing theoretical groundings for the data analysis by opening the design process and its temporal dimensions. Thereafter the text moves to temporal aspects in business strategy and how design and creative design thinking can help to reach these temporal goals. Then data, methods and results of this empirical study are presented. The preliminary findings of our study suggest that design can benefit companies by supporting company's

temporal development goals either in a short term or a long term. The temporal goals in the design task affect to different outcomes, which benefit the company in different levels. At the end and based on our findings we discuss the value of design for the companies' development process and how design can help companies to build the vision of their future.

2 TEMPORAL GOALS IN DESIGN

Holt (1990) identifies three different types of design process. Firstly design process can be analytical while aiming for only small modification for the design outcome and while there exists a little uncertainly of the alternatives. This approach aims for fast entering into markets with a slightly new or modified product. Secondly design process is iterative when it concerns medium-risk projects such as adoptive innovations or radical improvements. Iterative design process has middle term temporal goals for the outcome. Thirdly the visionary design is needed when the problem cannot be identified precisely. In addition visionary design has the longest time goals for the future. Visionary design can aim for entirely new product, process or system which is based on totally original solution. As Holt (1990, 197) describes "...the problem will exist only in a vague form or will have the character of a dream, a vision or an intuitive sense of what must be done in order to reach a desired future stage." Holt further argues that the focus in visionary design process is more on opportunity seeking and knowledge development through iterative and interactive learning process. Accordingly each design process always includes a temporal goal which affect not only to the outcome of the process but also to briefing, data collection and data interpretations and moreover the tools and methods which are used in the design process.

Keinonen and Takala (2006) present the process of concept design versus product design. Concept design can start as a research activity which continues as product development process. It can help to transform the invention into innovation with economical possibilities. The goal in concept design is not to improve the current product, that is the task for product design, but to open new views, and bring in new ideas, a fresh wind into the development work. Concept design for innovation looks further into the future than product design. According to Keinonen and Takala (2006) concept design can mean different things for different business lines and it can include different temporal aspects. Concept design can reach far to the future and can be really futuristic while in some cases the concept design overlaps with product design and has short term goals. Keinonen and Takala (206) separate concept design in a following way. *Product development concepts* have in most cases the shortest timeline in the goals to be implemented. *Emerging concepts* reach for radically different markets often with modified technological solutions based on user-centred information. *Vision concept design* is a process which reaches far to the future and it can support company's strategic decision-making. Vision concepts are not accurate and are not suitable for implementation as such. The role of vision concept is different; it can outline the futures development and seek opportunities and further it can help communicate company's brand, aims and future strategy. (ibid.)

3 TEMPORAL GOALS IN BUSINESS STRATEGIES

To understand more deeply the temporal aspects in design tasks and moreover temporality in innovation process and how these affect in the futures view in business, we have to open the temporal dimensions in the business strategies. Drawing on Drucker (2005) Kahtryn (2006) proposes that each organization exits contemporaneously in three different zones: past, present and future. Kahtryn further interprets (based on Flaherty 1999) that this can mean three different temporal goals in the business: traditional, transitional and transformational. Here the traditional way of doing business has the attitude "what is the business", while the transitional looks forward with the attitude "what will the business be" and the most challenging futures view is included in the transformational business approach with "what should the business be" (Kahtryn 2006, 31). Transformational business strategy needs visionary thinking and futures view. When company is focusing on innovation or planned change in their business, design can help the company to move towards a new vision of itself. This according to Kathryn (2006, 30-31) helps to manage transformational business.

How to understand the transformational business and its futures views on the base of strategy formulation? One way to approach strategy formulation is to see that according to Mintzberg et al. (2009), as a visionary process where strategy is more an image than fully articulated plan, which makes it flexible and adaptable including visionary seeing ahead or seeing beyond. Mintzberg et al. (2009) define the seeing ahead as a foreseeing an expected future based on the past events while seeing beyond constructs the future. It "invents a world that would not otherwise be" (ibid, 133). In here the business strategy is aimed to actively seek new opportunities, i.e. opening the futures views to the company or even creating dramatic leaps forward in uncertainty. In here the main focus is on searching for new opportunities (ibid.).

4 DESIGN THINKING TO REACH THE FUTURE

While foreseeing or constructing the future, creative approach and especially design thinking can help the process. In this process design can bring in the creative approach and design knowledge in the company. Creative design thinking, that approaches the problem holistically, is a useful tool for opening futures views to companies. Based on human-centered, holistic and abductive reasoning, design thinking applies empathy and creativity in the problem solving processes. Here, abductive thinking refers to creative problem solving, suggesting that something may be more than its initial impression. Therefore design thinking shows, what could be. (Cross 2007.) Design thinking can transform the existing condition into prefered ones (Simon 1969, cited by Mootee 2013, 29). Design can be an enabler to place company in the temporal development line towards the future. With the help of design the company and its actions can be positioned in the futures impositions and further this design quality can bring a real added value in competitive markets (Aminoff et al 2010, 30). In addition the futures thinking and capability for positioning makes design

a strategic tool through which the company can construct strategies how to create valued difference to competitors (ibid.). According to Mootee (2013, 32) "[d]esign thinking is about cognitive flexibility, the ability to adapt the process to the challenges." In our study we focus on different temporal goals in the design tasks and how these frame and set the design challenges and outcome differently.

5 METHOD

While studying the development work done by designers in small and medium sized companies, a multiple case study on the impact of design was done. Twelve companies, who have used external design knowledge mainly as a form of design consultant in their processes, were selected into this study. The design projects were executed between 2005 and 2012 and the scope of the projects covers activities in product developments, service design and company image building. The companies in our sample are from engineer-driven industries in metal, technology, plastic and textile.

Through managers' and external designers' interviews and through descriptive analysis, this study investigates, what is the role of design in different temporal contexts and further how design can create value in different temporal context. Moreover the paper discusses how design can help companies to build the vision of their future.

A qualitative and interpretative approach guides our inquiry while constructing themes on the phenomena of our interest (Alkula et al. 2002). The specific questions we ask ourselves in analyzing the cases for this paper are: *How the temporal aspects affect to the design task and the outcome, and further to the value of design? And in addition how did the design process – executed by an external designer(s) – opened futures views to the company?*

The primary data for our study are (1) interviews with company representative on the managerial level, (2) interviews with the external designers participating in the projects as well as (2) briefs from the projects provided to us in writing or described to us verbally.

6 RESULTS

Twelve companies' design cases were analyzed which after the cases were divided according to the temporal dimensions in the task. In here earlier presented Holts (1990) definition for design process was used as a basic frame to do the temporal differentiations between the cases. Furthermore Keinonen's and Takala's (2006) concept design approach, which includes different temporal dimensions, were applied for this division (in line with Holt's definition). Earlier presented Kahtryn's (2006) divisions of the business strategies with different temporal goals and attitudes have been added into the analysis. Following text presents the findings according to this division. Table 1 presents the overview of these three different temporal dimensions in design tasks.

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Stepping into the future with design intervention

Niinimäki, Pekkala, Peltola, Person

	STEPPING INTO TOMORROW WITH ANALYTICAL DESIGN	**BUILDING THE FUTURE WITH ITERATIVE DESIGN**	**JUMPING INTO UNKNOWN FUTURE WITH VISIONARY DESIGN**
Attitude	Traditional: "what is the business" Quick profit with successful product	Transitional: "what will the business be" Forward leaning attitude, learning process	Transformational: "what should the business be" Creative, bold and experimental mindset
Goals	Short-term goals	Mid-term goals	Long-term goals
Market/product	Well known markets/clients, modified product	New market areas or new product to previously known markets	Unknown markets, new product, unknown future
Brief	Tight brief, clear and easy to reach goals Company is feeding the process with background knowledge	Middle tight brief Some new external research information is needed to feed the design process	Open brief Research information feeds creative thinking
Design process	Analytical design Product development concepts or product design Often one time projects	Iterative design Emerging concept design Continuous development process	Visionary design Vision concept design Opportunities seeking
Risks	Low risk	Middle risk	High risks
Opportunity	Increasing sales and profit in a short term	Increases sales, improves practices in industry or improves brand value and business value	Big opportunity for success with new innovation
Outcome/Value of design	Well selling product Deeper customer satisfaction	Design is more a development process than the final outcome "Out of box" thinking	Design opens futures opportunities

Table 1 – Temporal dimensions

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6.1. STEPPING INTO TOMORROW WITH ANALYTICAL DESIGN

Five cases in our study can be defined to be analytical design cases where the main focus has been to develop a well selling product to increase the sales and profit of the company.

While analyzing the interviews from managerial side, the reason to use designers can be described. The manager of a company was curious or wanted to test designer's skills and capabilities. The attitude from managerial side in this category can be described to be realistic and practical while the aim was to develop quickly new product to enter well known markets.

The goal in these development projects has been to differentiate the product through design from competitors' ones or give a form to a new product. Some of these new products are based on technical innovation, which needs a physical and attractive form to be salable. In these cases company representative told that they had made a lot of background work for the basis of the task and briefing. Typically for these cases are that the design task has been well and even tightly framed, tasks include short-term goals and companies know their markets and clients well. The company knows exactly what their want the outcome to be and the risk in these cases is low and these design cases ended successfully. It can be interpreted that in some level the outcome of the design process is pre-understood or anticipated in the brief as well as in the manager's mind before the task begins.

The value of design in these cases is most of all economic benefit for the company. In some cases the outcome was described to be superior in the competition. The other value of using design in this category is the deeper customer satisfaction. Companies described that their clients were happy to get well functioning, attractive and well-designed product. In addition very often designer has brought in new knowledge and user-centred information for product development, which improves the outcome of the design and further deepens the satisfaction of the client and end-user.

6.2. BUILDING THE FUTURE WITH ITERATIVE DESIGN

Five cases from our sample can define to be iterative design with mid-term goals. The variety of design tasks in this category is larger than in previous, analytical design category. The design tasks have been product development cases often linking to brand building of the company, developing design practices in the company or in some extend building the future for the company e.g. through designing product generations to come. In general these cases challenge the company's current practices or business strategy in some extend. They might aim to change the focus in the business e.g. from not only product manufacturing but also adding and selling services. These cases can be described to be transitional, which according to Kathryn (2006) needs a foreword leaning attitude, with the approach "what the business could be". In these transitional cases the risk to successful outcome is higher than in previous well framed product design cases with shorter temporal goals.

The typical aspect in these cases is that design is seen as a part of the development of the company; it has a more strategic role in the development process in the business. In this category design project can open the futures development aspects for the company, but very often companies are not ready for radical changes and they lock the development for the near and more certain future. As one of the studied cases showed that finding new use sectors for company's products might be quite fundamental while thinking the future of the business. Designers in this case commented that during design process and while looking into the futures trends and possibilities even bigger changes in the industry might be needed, but it is quite common that industry changes the track slowly. The bigger is the change the bigger is also the risk of failure. Without having the courage to jump into totally new development path, some futures doors might be closed or the development might stop and competitors win the race with more creative product development processes.

Keinonen and Jääskö (2003) describe that concept design can open understanding towards new technological opportunities, new markets areas and emerging user-needs and hence concept design can support the learning process and decision making e.g. for the futures product generations in the industry. The value of design in this category can be interpreted to be that design is part of the strategy of the company and it is a continuous development process inside the company and further not only designers' work. Furthermore the other aspect of design value is the challenging aspect; designers can look beyond company's current practices and ask "what could be" or "how about this" type of questions. In few cases in our study designers managed to extend the goals in the design task from only product design to more strategic aspects of the business by challenging the original task. Many interviewed companies' representatives said that with designers the discussion is not only challenging but also much more free and liberating. With outsider it is easier to think outside the box without freezing the development to production possibilities only. This is an opportunity from the development viewpoint and builds the future of the business.

6.3. JUMPING INTO UNKNOWN FUTURE WITH VISIONARY DESIGN

Only two cases in this study can be defined to be visionary design with the futures view and long-term goals. These cases included a bigger risk and the outcome of the design task is not accurate solution, easy to implement as such but more linking to the vision of the future. In these cases the company is reaching for unknown markets with new product or service design. Aforementioned areas were totally unknown in the companies under study. These design cases can be defined to be opportunity seeking for futures business areas. The two cases are transformational from the business point of view, which needs new strategy building inside the industry to reach the new markets. These visionary design cases open futures views to the company. This approach needs bold and visionary attitude and high risk taking approach.

The other case not only opened the futures view for the product, not existing yet, but also included the visual design for this starting company. Therefore designers strengthened the image building of this company, which creates reliability in international markets and helps the company to get investments in their business. Therefore the design has not only opened the futures

opportunities for the business but also gave professional company image which supports their marketing and communication (image building).

In our study the company who was most eager to go further in the future also appreciated design aspect most. Interviewed company representative described that they even wished to have crazy design ideas from this project, which were not even possible to implement, but which open the unknown futures opportunities for them as well as for their clients. The interviewed person commented that without this kind of open and creative design-led process there will be no futures development in the engineer-driven industry "which only do what they know best." This notion links visionary design into vision concept design and transforming inventions into innovations with business potential. While reaching futures opportunities, the brief have been more open and designers have had possibility to be more creative and experimental in their work while the aim has not been to create product design suitable to be implemented as such.

The vision concept design reaches for futures opportunities and futures products and therefore the time perspective is much longer than in traditional product design process. According to Keinonen and Takala (2006) it can open perspective up to 15 to 20 years ahead. Vision concept design aims through scenario building not only to reach futures opportunities (innovations) but also to identify developments which change the business environment (ibid.).

Designers are capable to creatively explore, what might be possible and this skill is especially important when trying to reach novel strategy innovations, while this creative approach ends in multiple and creative options (Carlopio 2010). While the future is not a continuation of the past, in visionary design the solutions must be created, not found based on linear and analytical processes (ibid.). The value in visionary design is that it seeks and opens the futures opportunities for business and industry. The risks are high, but if succeeded also prizes are high.

7 CONCLUSIONS

Innovation and innovative process is often, but not always the necessary prerequisites to business and its core existence (Gorb 1990) and further business renewal. Yet innovation and visionary design is about the futures views and transformation in business while analytical and iterative design processes with lower risk give faster the economical results.

Gorb (1990, 21) argues that design can be the driving force for change and further design can influence on the rate of the change. The change aspect is most obvious and biggest in the visionary design and it can offer value through capturing futures opportunities, yet including bigger risks with inaccurate concept design. On the other hand the iterative design process can offer a company a continuous development process towards the future and therefore it can offer a steadier path with lower risks towards building the future of the company. Finally the value in analytical design is the fast profit making possibilities with low risks.

According to this study development work with design can be seen as an opportunity to open futures views for innovation in industry. The view and

innovation can reach close by or further in the future. The most challenging is to build the vision of the future through visionary design and lay the ground for the futures innovation opportunities for business renewal. As Borja de Mozota (2006) argues design can be used as a vision which can build strategic value to change management.

Even this study has its limitations (limited data) it showed that the use of design in industry needs to be connected to temporal goals in the company's strategy. Therefore as Cooper and Press (1995) state design can contribute strongly to company's strategic goals. These preliminary findings have to study further while investigating the contributions of the value creation through design into company's strategy implementation and further how design can support innovation capabilities in companies. Yet it can be argued that design and design interventions can offer several strategic benefits for companies in temporal context.

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