Creating Value through User Experience: A Case Study in Metals and Engineering Industry

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Abstract

Suppliers in metals and engineering industry are turning to user experience as a possible source of competitive advantage and value creation for the customer. Based on thirteen interviews carried out in three Finnish supplier companies, this paper explores how these companies perceive and approach user experience, and why it is in their interest to examine user experience. In these interviews, user experience was perceived both as a management tool within the company and a source of differentiation in the market. Interviewees identified the two main challenges: creating a solid value argumentation for user experience as well as showing the link between user experience and the monetary value it can create for the customer. The proposed solution to overcome the challenges includes four phases: 1) identifying the current position in turning user experience into value proposition, 2) understanding customer's business model, 3) crafting the value proposition by showing long-term tangible and intangible impacts and using supplier's internal knowledge on users in selling, and 4) communicating the value of user experience more effectively by improving the competence and trust of the sales personnel in user experience as a source of value for the customer. In addition, a conceptual framework for linking user experience and customer value is presented.

Keywords: User experience; strategic tool; value creation; metal and engineering industry; co-creation; value-based selling

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1 Introduction

This paper explores why and how companies in metals and engineering industry approach user experience as a new way to propose customer value in the business-to-business (B2B) context. In economic theory perfect competition describes markets such that no company can set the price of a homogenous product. When competition drives companies towards the conditions of perfect markets, profits will approach close to zero. To avoid such an undesirable situation a company can attempt to decrease its costs faster than rivals—that is, via leveraging the cost-advantage. Another opportunity is to differentiate the offering, a tactic that is now widely used in so-called high-cost countries. In European countries, where companies have also other barriers of competition (for instance, barriers having their roots in local legislation and demographics) than high cost-level, companies are employing the differentiating strategy (e.g., Zook & Allen, 2011). However, since the features in the offerings are also more and more alike, new ways to create advantage to get along in multinational/global competition are requested. Recently, high expectations have been set to experiences as the next enabler of differentiation (Gebauer, 2005; Meyer & Schwager, 2007; Verganti, 2011).

User experience is a concept that is used in the field of human-computer interaction (HCI) to focus design, development and evaluation of technology and interaction with it in the direction of user's experience. User experience is defined widely as the "*person's perceptions and responses resulting from the use and/or anticipated use of a product, system or service*" (ISO 9241-210:2010). By user we mean a person who interacts with a product or system to accomplish a goal in his/her activity (adapted from ISO 9241-210:2010).

In B2C domain, the user and the customer are often equivalently used words, whereas in the B2B domain the user and the customer are distinguished by their role in relation to the system. In this paper, we define user as a person who interacts with the system in instrumental goal or work-related activities, whereas a customer refers to a person who makes decisions relating to, for instance, acquiring the system, but who may not interact directly with the system. A distinction between user experience and customer experience is important because, in spite their common points, these two concepts should not be treated as synonyms (Reichelt, 2012). Meyer & Schwager (2007, p. 118) have defined customer experience as "*the internal and subjective response customers have to any direct or indirect contact with a company*." User experience has had a more product-oriented focus (Verhoef et al., 2009, pp. 32–38). It emphasizes the experience of the user that interacts with the system (Hassenzahl, 2003; ISO 9241-210:2010; Mahlke et al., 2007).

Most of the user experience research (e.g., Bargas-Avila & Hornbaek, 2011) as well as company efforts on user experience have focused on consumer-related systems and solutions. Although usability studies focused first on systems in work domain, we still know surprisingly little about user experience in B2B contexts. A few empirical studies on user experience in the work domain have been reported (Buchner et al., 2012, Harbich et al., 2008, Obrist et al., 2011, Väätäjä, 2010a, Väätäjä, 2010b). It has been proposed that user experience might become a source of product/service innovation, leading finally to an advantage in the competition (Lindgreen et al., 2011). Improving the offering by user experience, for example, should eventually lead to greater perceived value by the customer. However, scant evidence is available about how even successful B2B firms have carried out this value transformation.

This study investigates how and why companies use or attempt to use user experience in their activities and how they build the link from user experience and related innovation activities to the value argumentation in the metals and engineering industry (MEI).

In this paper, we address the following questions:

1) Why are the case companies interested in user experience?
2) How do the case companies approach user experience in value argumentation and value selling?

3) What are the challenges and solutions in building the value argumentation with user experience?

The main contributions of this paper are the following. This is among the first empirical studies that demonstrate how and why suppliers in the metals and engineering industry, have approached user experience in building the value argumentation and in value selling. Second, based on earlier research, we present an initial conceptual model to link user experience and customer value. Finally, we exemplify how firms may address the challenges of creating value argumentation for their customers.

2 Related research on customer value and user experience

In this section, we review the concepts of customer value and user experience in order to explain theoretical linkages to the empirical study.

Complexity of customer value

Linking different value interpretations to management practices has been a challenge in management research. Lindgreen et al. (2011) suggest a process model for value orchestration to explain how value analysis, value creation and value delivery should be linked together in industrial markets. By integrating the resources across firm boundaries, possibilities to shared value creation (Porter & Kramer, 2011) are enabled. Creating shared value will require concrete and tailored metrics for each business unit, thus linking the above user experience measurement directly to fulfillment of management objectives. Recent research on value creation (Yi & Gong, 2012; Mukhtar et al., 2012) emphasizes co-creation of value with customers through experiences and argues that value unfolds in actual use, not only in exchange (MacDonald et al., 2011). This observation is underlined in B2B industries, where systems' lifecycles last over decades. In addition, services complementing the product-based offering increase the importance of customer's experience in perceiving the value (Teixeira et al., 2012).

Customer value is referred to as overall assessment (Zeithaml, 1988), a function of consumption behavior (Sheth, Newman, & Gross 1991), perceived quality adjusted for the relative price (Gale 1994), emotional bond (Butz & Goodstein, 1996), relationship (Payne & Holt, 2001), personal perception (Woodall, 2003), or subjective personal introspection (Holbrook, 2005). Holbrook (2005) distinguishes subjective assessment of customer value into four perspectives: 1) interactive, 2) relativistic 3) preference, and 4) experience types of value. Furthermore, he identifies three types of relativistic value: a) comparative, b) personal, and c) situational, that all exist concurrently in each case.

The concept of customer value has been addressed from two complementary perspectives. First, a company provides unexpected value for the customers through commercializing innovative ideas and technologies (e.g., Jolly, 2003). Second, a company provides expected but formerly undelivered value for customer where value represents a new subject of innovation complementing the traditional subjects of process, product, and organizational innovation (Zott, Amit, & Massa 2011). The latter includes new forms of collaboration and cooperation. In the innovation and management literature, a customer relies on comparison of cost and benefits (Payne & Holt, 2001; Van den Haar et al., 2001). Thus, an important role for the concept of customer value is that of unlocking the economic value potential that is embedded in new technologies and converting it into market outcomes.

In economic terms, the value of choice, also called utility (or expected utility) is a subjective property that can be thought of as gratification or satisfaction associated with the outcome of the choice (Fellows, 2004). Expected utility has two fundamental components: one is the magnitude of reward that the chosen option would provide, and the other is the probability that the choice would yield the reward (Bernoulli, 1954). According to the standard economic model, assessing the value of an option involves calculating the magnitude of reward and estimating the probability of gaining it. In order to reach an understanding of dynamic nature of customer value concept, we shortly present three key concepts (expectations, experiences, and evaluation) below.

Expectation value represents how the customers believe the innovation will perform (Woodruff & Gardial, 1996). Customers may perceive value consciously, unconsciously, or pre-consciously (Gorth & Dye, 1999). Therefore, value for the customer captures a range of associated, existing concepts, implying an idea of the existence of properties that a customer may perceive or experience (Woodall, 2003). *Experiential value* cannot occur without personal interaction through which factual knowledge is organized in the memory. The assumption behind experiential value is that value accumulates when the number of executed trials increases (Hutchinson & Eisenstein, 2008). Furthermore, familiarity, referring to the accumulated level of experiences related to the product, leads to increases in expertise. *Evaluation value* also occurs in customer valuation. By assigning value to an option, humans evaluate it (Fellows, 2004), which can occur as a reduction in sacrifices, presence of benefits, or any weighted combination of sacrifices and benefits (Woodall, 2003). Evaluation value includes several sub-processes that may be involved to the stage: how human's associate the value to an option, internal, and external context, time versus delay, probability versus risk, the hedonic property, the reward anticipation, and what could be expected and learned (Fellows, 2004). *Evaluation value* might depend on the time/delay and depending on the probability/risk to gain the option when option is evaluated (Fellows 2004). A customer may use the same criteria for judging value *ex ante* or *ex post*, or they may use different criteria (Oliver, 1999; Parasuraman, 1997).

A relevant question is how the different conceptualizations presented above are realized and used in the company management. For instance, if sales function cannot understand and communicate a firm's value proposition to customers, any strategic focus on value creation will not improve performance (Anderson et al., 2007). In order to link customers' needs and firm's internally crafted value proposition, Terho et al. (2011) present three phases of value-based selling: 1) understanding the customer's business model, 2) crafting the value proposition, and 3) communicating value to customers (see Table 1). Terho et al. (2011) underline that value-based selling goes beyond presenting the benefits of an offer to the customer. We argue that through in-depth understanding of user experience and its different manifestations the proactive crafting of value propositions can be done and the value thus communicated to the customer. As the focus of value-based selling lies in value-in-use potential of the offering for the customer's business profits, it is well aligned with user experience phenomenon that also actualizes itself through perceived experiences in use.

TABLE 1 here

In the first phase, the understanding of customer's business model may significantly help customers to make purchasing decisions. When a selling company has identified value drivers (how the product/service is used and experienced in a buying company), it may gain a better position in its markets. The second phase targets to adjust value proposition to fit with customer's expectations. This phase balances delivered (both parties agree), undelivered (desired but not delivered) and undesired (delivered but not desired) values, deciding to what extent a firm should modify its offering to fit needs of a single customer and to what extent to fit the needs of a targeted customer segment. The third phase articulates, through multiple techniques, how and why the offering contributes a customer's business goals. In this paper, we utilize this framework to create a link between user experience and value-based selling as well as discuss the current phases and challenges of the case companies and their reported approaches in the interviewees. It is ultimately the sales where the value of user experience becomes is manifested openly.

Binding User Experience with Customer Value

As a concept user experience is connected to the shift towards the "experience economy" (Pine & Gilmore, 1998), which is penetrating into B2B markets. For instance, KONE, a global leader in the elevator and escalator industry, announces that the firm's objective is *"to offer the best People Flow™ experience by developing and delivering solutions that enable people to move smoothly, safely, comfortably and without waiting in buildings*" (KONE, 2013). This example demonstrates the transition from the product-oriented

view towards the experience-oriented view in metals and engineering industry. It also explicitly states the experiential qualities of the experience that can be operationalized to smoothness of movement, safety, and comfort, and expediency of use.

In the field of HCI, the focus has shifted from usability to the wider concept of user experience in the 21st century. Usability illustrates the second wave of focus on user's perspective to technology usage, after human factors and ergonomics. Usability emphasizes making interactive systems efficient and effective to use and aims to increase user satisfaction with the systems (ISO 9241-210:2010). The standard for Human-Centered Design of Interactive Systems (ISO 9241-210:2010) defines usability as the *"extent to which a system, product or service can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use*." Effectiveness is the *"accuracy and completeness with which users achieve specified goals,"* whereas efficiency is defined as the *"resources expended in relation to the accuracy and completeness with which users achieve goals*," and satisfaction is the *"freedom from discomfort and positive attitudes towards the use of the product."* Several different measures exist for these concepts (see Hornbæk, 2006). In addition to operationalization of usability, the definition emphasizes 1) user, 2) system, product or service as the technology that the user interacts with, 3) the user goals in using the technological solution, and 4) the context of use. Overall, usability focuses on supporting the utilitarian or instrumental goals of the users, and it is connected to the instrumental (pragmatic) quality of the system (Hassenzahl, 2003; Mahlke et al., 2007),

User experience illustrates the current wave of user focus in HCI, emphasizing the experiential aspects, such as pleasure and emotional responses, in addition to usability. One of the first definitions of experience in HCI is by Alben (1996). This definition gives concrete examples of the qualities of the user's experience: *"All aspects of how people use an interactive product: the way it feels in their hands, how well they understand how it works, how they feel about it while they're using it, how well it serves their purposes, and how well it fits into the entire context in which they are using it."* Alben uses the concept of quality of experience for these experiences explicitly and describes the quality of experience by the following characteristics (ibid.): appropriate, learnable, usable, aesthetically pleasing, sensually satisfying, and manageable. Hassenzahl and Tractinsky (2006) describe user experience as follows: *"UX is about technology that fulfils more than just instrumental needs in a way that acknowledges its use as a subjective, situated, complex and dynamic encounter. UX is a consequence of a user's internal state […], characteristics of designed system […] and the context […] within which the interaction occurs."*

Several frameworks for user experience suggest that user experience, which can be approached as the subjective perception of product character or qualities (Hassenzahl, 2003; Mahlke et al., 2007), experiential dimensions such as descriptive attributes, excellence, and appropriateness to use (Jumisko-Pyykkö, 2011), and emotional responses, (Mahlke et al., 2007) all affect the future usage behavior (Hassenzahl, 2003; Mahlke et al., 2007) and overall judgment, preference, and satisfaction (Hartmann et al., 2008; Hassenzahl, 2003; Mahlke et al., 2007). We apply this view, specifically concentrating on the descriptive system qualities and experiential dimensions, by connecting these elements to impacts that the user perceives. The perceived impacts of system use and the related user experience are connected to the perceived impacts by the customer and finally to the value the customer perceives.

Based on frameworks on user experience components (Mahlke and Thüring, 2007), user-centered quality of experience (Jumisko-Pyykkö, 2011), and value creation (Woodruff 1996; Woodall, 2003; Spiteri & Dion, 2004), we crafted an initial conceptual framework that describes this view (Figure 1). We aim to elaborate on it in further empirical work. The framework was crafted as follows. User experience (Hassenzahl, 2003; Mahlke et al., 2007), user-centered quality of experience (Jumisko-Pyykkö, 2011), user satisfaction (Wixom & Todd, 2005), and information systems success (DeLone & McLean, 1998; DeLone & McLean, 2003; Petter, Delone, & McLean, 2008) as well as customer value literature (Woodall, 2003; Spiteri & Dion, 2004) all refer to perceived quality of a system (service, information, offering etc.), especially in frameworks or models intended for measurement and evaluation. These frameworks with the described qualities are

often overlapping, but the perspective may differ based on whether the question is about user's perceptions or customer's perceptions.

As defined earlier, in the B2C domain, the user and the customer are often used as equivalent words, whereas in the B2B domain the user and the customer are distinguished by their role in relation to the system and its use. Furthermore, the reported factors influencing user experience and perceived customer value appear to be partly similar (related to user/customer, system, and situation, for example). Examples of perceived quality or attributes for systems are *"reliability," "availability,"* and *"usability.*"

The experiential dimensions in user experience literature often include emotions, affect, or feelings (Mahlke & Thuring, 2007; Law & van Schaik, 2010). Experiential dimensions can also be identified from users' descriptions of their experience collected with suitable methods, such as recording free verbal descriptions for quality of experience and affecting factors in interviews or by measuring the quality based on a priori defined qualities (see Jumisko-Pyykkö & Utriainen, 2011; Strohmeier, Jumisko-Pyykkö, & Kunze, 2010). Examples of users' experiential dimensions in the MEI domain include *"feeling safe and secure," "feeling of being in control,"* and *"situation awareness,*" for example.

The presented framework depicts the content and relationship between user experience, impacts perceived by the user and customer, and customer value (Figure 1). It proposes that users perceive the quality of the system in interaction with the product, and the characteristics of the system, user, and context of use contribute to the quality perceptions that are part of the experiential dimensions as outcome of the perceptual process (see Jumisko-Pyykkö, 2011). It further shows that there is a process linking the experiential dimensions to the perceived impacts of the system usage and experience, first on the level of the user and then further on the level of the customer, based on the user level impacts. The impacts that customers perceive are further connected to the value perceived by the customer. In turn, all elements of the model also relate to the supplier, specifically the produced qualities, impacts, and value for the customer that are aimed at by the supplier. The model aims to craft the value argumentation for user experience, provide a theoretical background for studies on customer value created by user experience, and aid in innovation and other R&D activities to guide in identifying the user-experience-related issues and influencing factors that create pursued value for the customer.

FIGURE 1 around here.

3 Methods

We used the case study approach (Yin, 2003) to explore user experience as a strategic factor from the supplier perspective in a B2B context in metals and engineering industry. We aimed at answering the following questions:

1) Why are the case companies interested in user experience?
2) How do the case companies approach user experience in value argumentation and value selling?
3) What are the challenges and solutions in building the value argumentation with user experience?

Three globally operating companies in Finland were chosen for the study (see Table 2). Companies were chosen from an on-going national level project in Finland focusing on user experience and usability in complex systems. The selected companies differed in the maturity of their user experience focus and approach.

TABLE 2 AROUND HERE

At the time of the study, two of the companies (A and C) had a group focusing on user-related issues, such as usability, interface, interaction design, product concept design, and/or user studies. In addition, these companies collaborated with external partners (other companies) when needed. The third company (B)

was considering what approach to take. So far they had used external company partners in specific cases when user studies, concept design, or interface design was needed. In one company (A), a separate group specifically participated in the company's internal value selling projects, providing organization with user-related information, participating in standardization, and being in a consulting and guiding role in the development projects by providing guidelines for user- and usability-related issues. In their vision and strategy, this company explicitly states the importance of user experience, whereas the other two companies were, at the time of the study, looking for ways to incorporate user experience into company practices and strategy on different levels. The size of the existing groups in companies A and B was relatively small, less than ten people, so the groups can be involved in only some of the projects directly.

To select the interviewees, we used a snowball sampling method, starting with the project's contact person from each of the companies. During March and June 2011, thirteen semi-structured interviews were conducted. Interviews were carried out by two researchers. Two interviews were carried out as a pair and the rest alone. Semi-structured interviews were aimed to gain a general overview of 1) how interviewees perceive user experience in their domain and why user experience is of interest to them, 2) current user-experience-related activities in the companies and 3) user experience as a strategic factor, especially in value selling to the customers. Eight interviewees worked in different positions in R&D functions varying from usability specialists and user experience experts (4/8) to managerial positions in R&D. The rest of interviewees worked in customer project delivery, marketing, segmentation, sales, and services.

The interviews took about an hour and were recorded and transcribed. Data were analyzed by data-driven content analysis with NVivo8, by theming the data (Saldaña, 2009). A user experience researcher first coded the data with open thematic codes that emerged from the data and made an initial categorization for the emerging themes. Next, two researchers with industrial management background joined to provide explanations for the emerged themes by bringing in theoretical frameworks on value-based selling, and customer value, to be combined with user experience models and to address rival explanations. Three researchers' theoretical knowledge was then jointly used in the final interpretation and categorization of the findings.

4 Results

We begin by presenting first the description of the MEI, as the context of the study as described by the interviewees. Subsequently, we present trends and drivers that interviewees mention help to direct the company interest to user experience. Second, we describe how interviewees perceived user experience to be a differentiating factor for their businesses. Third, we describe how the interviewees brought up challenges in crafting the value proposition as well as in communicating the value based on user experience. Finally, we describe the attempts and actions to craft and support communicating value of user experience. We also describe the similarities and differences between the case companies when applicable.

The context of the metals and engineering industry

The interviewees in all companies gave surprisingly similar descriptions for the MEI industry. First, in all case companies, the critical role of their systems, solutions, and offerings for the customers' business was emphasized. If the system does not function, it has direct and immediate impact on the customer's business. Second, the complexity of the systems is rising due to increasing levels of automation, more complex technological solutions, and the variety of stakeholders who are involved from the design and development of the systems to the life-cycle services. Third, the even decades long life-cycles and therefore potential changes in customer's business environment call for flexibility, modifiability, and modularity of the provided solutions.

Trends and drivers for user experience focus

For all of the suppliers in the study, the role of the systems for the user of the system is a tool or a means to an end: that is, to reach primary goals and support or be part of an on-going activity. This role in functional terms is critical, but experiential aspects arise as well. Several trends and drivers were mentioned as pushing for user experience focus in suppliers' innovation activities. First, the increasing maturity of available technologies and new interaction types used in the B2C domain raises the expectation levels of users as well as customers towards experiential dimensions, also in the B2B domain. This calls for new innovations, following the technological trends and foreseeing their impact on supplier's solutions. This in turn stimulates innovation activities within the supplier company. Specifically, technological innovations were perceived as enablers for good user experience. However, the importance of combining them with novel holistic solutions and offerings that support both users' positive experiences as well as customers' goals and business logic was emphasized.

Second, the expected changes and trends related to the users and work force of customer companies. These trends include decreased educational levels and increased sub-literacy of users and employees. In addition, the employee turnover is expected to increase as employees change jobs more frequently and stay only for the short-term in one job. Third, the aim is to search for further improvements in efficiency or productivity of the customer that could be supported by better user experience. These improvements include reducing learning time, increasing intuitiveness of use, reducing sick leaves, and generally aiming for positive impacts on a more satisfied user. Satisfaction may reduce the employee turnover, support customer's image as an attractive employer as well as a business partner. As a fourth theme, some interviewees mentioned customer companies' values, experiential targets, or even requirements (which are related to, for example, ecological aspects or employee satisfaction) to be drivers for user experience focus, specifically connected to customer's brand or company image. In addition, the supplier's own brand, strategy, values, or the building or maintenance of supplier's own brand image were identified as drivers of user-experience-related focus in innovation activities. As these themes exemplify, a number of trends and drivers for focusing on user experience were identified.

User experience as a differentiating factor

All case companies shared an aspiration to differentiate themselves from other companies within the domain and be forerunners in the field of usability and user experience. In the interviews, user experience was described as a differentiating factor that offers competitive advantage over competitors:

> [UX] is important now and in the future very important… And at the moment it is a differentiating factor in this business. And it brings clear competitive advantage.

One interviewee explicitly described how the company wanted to gain competitive advantage by being the forerunner with user experience of their solutions:

> We want with user experience to be the number one in these products and in this sector. We want to be the forerunner. In our products many things are ones that will be copied. We want to be in the forefront.

It is widely acknowledged that intangible characteristics are harder to copy (Fernandez et al., 2000). The internal competencies and knowledge of the personnel, user-experience-related processes, and the tacit knowledge within the organization enable sustainable advantage against rivals.

Challenges of using user experience in value argumentation

In all the companies, interviewees mentioned that crafting and communicating the value of user experience was a challenge. Long, interconnected chains in value networks include many different actors and thus the links to the end-users are far from direct. In addition, due to complex business environments, reactions measured by customer feedback might be based on other reasons than users' experiences – or at least, the effects are ambiguous. Furthermore, interviewees mentioned the conservatism of the domain and customers as well as the lower maturity level of the customers when talking about user experience compared to the case companies, creating a challenge that calls for strong value argumentation.

According to the interviewees, price is often the most important hard fact when closing a sale. Other hard facts include reliability of delivery and system availability, technical parameters, and life-cycle cost. Interviewees identified that these important value arguments differed from culture to culture. For example, some interviewees mentioned that in some countries, eco-efficiency is a trend, whereas in other countries, the focus is still on cost efficiency. For the end-users, on the other hand, the value unfolds in actual use.

> In purchasing often the costs are minimized whereas in use, the comfort of use is highly essential for the users and usability becomes important to those that really operate it.

To show the created value in use poses a challenge in terms of crafting the value argumentation, creating a need to point out the benefits and value in long term.

> It is quite difficult in fact to perceive, how to build it [value argumentation] and to state it, so that you can bring it to the top level of the decision chain, so that it would have some value. If you think about the decision criteria in companies for example when choosing phones, how these things are decided and invested in and how much it matters that a certain product has good usability or something else, then it is quite far from the actual decision making situation.

The end of above quote reflects also the difference between user and customer experience as we have defined in this paper. The interviewee has found that the factors affecting investment decision do not include user experience (or the potential benefits that it may result in). Thus, a challenge exists how either modify customer's decision criteria to include also UX related issues, or how to develop such value argumentation that responds to those criteria and includes UX aspects.

In addition, there may be a gap between the marketing and sales and R&D (research and development) that creates a need to find ways to bridge this gap:

> … we have this basic innovators and engineers problem, that we maybe are not capable of telling these things right, so that they can be turned into marketing and from there to the moment of sales to right kind of argumentation. Because, in a way this is technology and these are nice things, but then simplifying it and making the message appealing - that calls for a somewhat different set of skills.

Crafting the message of the benefits and value that the supplier's solution is needed to be communicated to the customer. Transforming the benefits and offering to an appealing message calls for in-depth understanding of the customer's current and becoming needs, including product and process perspectives of the customer's business.

Need for showing the value of user experience by measures

Showing the value of user experience to the customer would require a measure that could show the value in terms of clear data. Creating this type of a measure is challenging, as the output is related to the customer's business. Therefore, because measures are needed to show that the focus in design and

development on user experience has been worthwhile, there is a need to build supplier's own meaningful measures, such as an increase in selling solutions in a certain category:

> Real measurement, the output should be that their [product] is sold faster or they sell for a higher price. And proving that is notably challenging. Our measures are therefore based concretely on how we have been able to change the purchasing behaviour of our customers.

This interviewee further described how user experience was specifically the differentiating factor between the "economical" and "middle" category, not for the exclusive category, where the cost is not an issue:

> We have three categories for our devices, of which the economical category is technically brilliant, but it is cost-effective. The middle category is technically almost identical with some extra features, but it is more focused on the design. Then is the third, the exclusive category. But what we measure, is how much more we sell the middle category compared to the economical category. [...] the biggest difference between the economical and middle categories is user experience.

Understanding customer's business is the key

A common theme for all three suppliers in crafting the value argumentation was that, as they operate in the B2B domain, the users of the systems are not the buyers of the system. Furthermore, the value needs to be shown not only within the customer company to various stakeholders, such as the IT department, but sometimes also to third-party external decision makers and influencers, such as city officials or other contractors. In the following quote existence of user and customer experience is visible when the interviewee underlines the importance of understanding customer's whole business:

> The better we understand our customer's business, the better we can build products and solutions and services that support that business. If we start to think about the [product], that it functions and moves certain meters per second and it carries this many kilos, then it is quite a narrow sighted view to it. That we have to understand [how and when the system is used less], could we then do the maintenance or something. We have to understand the whole picture.

Comprehensive understanding of the customer's business model and earnings logic was mentioned to be essential in crafting the supplier's offering as well as in value-based selling when crafting the value argumentation as discussed next.

User experience in value argumentation

Many of the interviewees described how the value argumentation must be based on the value chain and the understanding of customers' business logic. A segment manager captured this as follows:

> We need to look for the value argumentation from the customer chain.

The interviewees of one of the companies described an explicit approach to building the value argumentation, also related to user experience. The role of the supplier in the value chain was described to provide their customer the means to use the value argumentation further with customer's own customers:

> We need to help the customer to build their argumentation. If we think that the developer has to sell the investment to a third party, we give the developer the means to build the argumentation.

Another interviewee added how the technological solutions as such cannot be used as effective value arguments, since competitors have similar solutions available. However, if the sales person explicitly

emphasizes these solutions in the selling of the systems by showing the created benefits, their usage at the point of sales becomes more powerful:

> Strong value arguments, like those [related to technological solutions] are, we cannot unfortunately use them, since competitors supply similar solutions. [...] but the question is, how it is brought up. [...] when we have a sales person describing the content of the offer, does he/she bring these out strongly, [...] we have the possibility to bring this information to the customer, so that they can use it further. This is not self-evident. Like I see, that our sales process can be, that our sales person can be more active than our competitor's sales person, and from there we bring the added value, not the technology itself, but that we help our customer's business by bringing out the benefits. But I also admit that if the competitor sells and is also active, then we end up in a situation where the differentiation is not possible.

As the interviewee notes, a sales person's competence in using traditional value arguments is effective, as long as the competitor does not have the same capabilities.

All of the companies sought ways to integrate user experience into value argumentation and ways to craft the argumentation. One of the three supplier companies (A) had already taken an active stance in communicating the value of user experience and building the internal competencies to support this stance. One of the interviewees from the company described how using user experience in the value argumentation in itself serves as a differentiating factor:

> We believe, that the argumentation of the value of the end-user experience as part of the other argumentation that we bring to the customer, it is a differentiating factor for [us].

This company had several approaches to using user experience in the crafting the value argumentation and communicating the value proposition to the customer. First, we discuss how the interviewees approached building value argumentation via user experience.

For two of the studied supplier companies, the primary end-users of the produced systems are employees of the customer company. Attempts to craft user experience in value argumentation are exemplified by the following quotes:

> … it has to be argued somehow as better working conditions, that employees enjoy and stay longer, employees are satisfied, work more efficiently. This type of arguments could be used… Better user experience enhances their business because work is more efficient and … Less sick leaves, if work ergonomics can be enhanced with our equipment, for example.

> I would see that user experience has quite a direct connection to the customer's experience… If the users find their activity meaningful and efficient, then it surely has a positive effect on the customer's business.

> From customer point of view, the argument to them is higher work efficiency. Nice to come to work, no sick leaves. Maybe less educated employees, other arguments like these, there it comes from.

These quotes exemplify a pattern in the attempts to craft the value proposition based on user experience in the B2B environment: the primary users are employees. A system that enables a good user experience supports better working conditions, leading to a satisfied employee and more efficient work. These in turn enhance customer business because the work is more effective, because there is less employee turnover and less sick leave, or because the time to learn to use the systems is reduced.

Strengthening competencies in crafting and communicating value of user experience

Interviewees mentioned several approaches for bringing user experience into value argumentation. First, the norms and standards that, on the other hand, set mandatory requirements for the systems can affect user experience, in addition to the technological solutions mentioned earlier. They can therefore be explicitly used in sales:

> … all of these are not innovations, some of them are standards and norms, that are required. But of course they affect the user experience. And even if it was part of norms, it does not mean that we cannot use them as sales argumentation. That even if the competitor would offer exactly the same product, they are not capable of pointing out that 'did you notice, that this product has this and this?' In a way, how would I say, only things that we are best in are emphasized, when for the user they can be nice, but something else is more important? So through the user experience and customer understanding we gain insight into what kind of things to emphasize, so that we speak relevant language to the customer.

End-user-related information that is created and used in R&D can be actively incorporated into the value argumentation:

> We have used these end user groups traditionally in the product development as a thinking model ... Now we aim to bring them to aid the sales, so that we tell our customers, that we have taken into account their future customers already when we have developed the products.

The competence of the sales personnel becomes a key when using value argumentation in sales:

> The challenge is that the sales persons need to have an ability to express this, so that they know who they sell to, that is the first assumption, but also the ability to sell value for the customer's customer. It requires a certain level of competence and trust in the own argumentation...

> … at least our sales organization, our sales personnel, is much more competent to discuss the topic [user experience in 5 years' time as a differentiating factor]. This is the first thing that we have to focus on. Our sales organization must be able to speak about customer values, and not only concentrate on technical specs and price, but thinks about total cost and we can set the price for the whole package taking into account the benefit of the maintenance services. But understanding the customer is not in active use. This depends on the other hand on the customer not being prepared to talk about these issues much. But this is the first action, to grow the competence of the sales organization.

Increasing the competence of the sales personnel builds the argumentation, clearly outlining customer's language and benefit.

> We can specify the right device to the right purpose and clearly articulate to that customer group, what is the concrete benefit that this solution provides. That we first know who we are selling to, and then think about what is being sold, and tell in clear language, the customer's language, what value the solution brings about.

The competence of sales personnel is in itself a differentiating factor that brings competitive advantage in sales:

> And these are the differentiating factors. The first is more important in differentiation [competence of sales personnel], technology can be copied, at least in the mid-term. But the competence of the sales organization and that we get the product presented in right way at a right

place, copying and creating—that is not so easy for the competitor.

Above quotes illustrate well the encountered and recognized challenges in the case companies when attempting to implement UX understanding into the level of operations and finally, into the products and services they provide to their customers. Even though several interviewees seem to realize the business potential that user experience may offer, there is still plenty of room to develop current practices to reach the targeted level of user experience utilization.

The "iPod of robotics": An example of implementing user experience of product to create value for the customer

We describe here shortly one successful design case for user experience described in one of the case companies This example illustrates how combining customer and user understanding, in combination with designing for user experience, creates tangible and perceivable impacts for the customer that in turn create value for companies. In addition, the example illustrates how customer references provide practical tools that can to be used in sales to create better value propositions.

The company made a customer study with their industrial robotics product lines. As a result of the study, ease of use was rated high in customer value. The interviewee describes:

> And we saw that it is clearly an attractive thing for this product line. And then we started to think how to solve it.

He continues to describe the design process, where they used iPod player as a metaphor to set the goal for the design and user experience:

> We had as a goal to make the "iPod of robotics". We started with the idea that the basic use is comparable to a player. That in a player there are tracks that are played and so it is in robotics. There are different kinds of programs that are played. We started from there, then as one driver was that the user interface is obvious, like they [users] know all the time the situation. Meaning that there is no need to train him and all the user manual that is needed for the use, it is there.

With a traditional teach pendant, a user needs some robot programming experience to create product programs line-by-line. With the player type of interface, a user determines work cycle phases, work piece measurements for different process phases, as well as the palletizing pattern for material stations, and then the system prepares a product program for the robot. Thus, the new interface makes the programming easier and user-friendly compared with the old solution. Figure 2 illustrates the traditional and the novel user interfaces.

FIGURE 2

The feedback from customers for the created solution was positive. The customers mentioned the following benefits and impacts created by investing in user experience of the solution:

- It is faster and easier to operate (time savings) than the old version with numerous buttons.
- It enables more effective use of systems due to time savings in programming of the device.
- There is less need for training to operate and program the device.
- The risk of errors in programming the device is reduced.
- There are fewer errors in actual usage of the device.
- The recovery from fault situations is easier.

5 Discussion

Our results indicate a connection between user experience and competitive advantage in an industrial context. In the three case companies, interviewees considered user experience to be a differentiating factor that is expected to provide value for the customer as well. A thorough understanding of a customer's business was seen as essential for crafting the value proposition. However, the interviewees assumed that customer expects to see a direct link between user experience and the value it creates, preferably

measurable, for example, in increased income or productivity. Showing this with measurable figures at the time of selling the solution was considered to be a challenge. On the other hand, information created and collected in R&D related to users and user experience was seen as a possible source of insight for communicating user experience and created value. In addition, increasing the competencies of the sales personnel to use and communicate this information and value were suggested to be important.

Based on our findings we extend the approach presented by Terho et al. (2011, see Table 1) for linking customer's needs and supplier's value proposition as presented in Table 3. Specifically, we add one phase for "Identifying the current position in turning user experience into value proposition" before the first phase in the original process by Terho et al. This phase is important since it sets the pace for the next phases. We exemplify in Table 3 how the case companies' interviewees addressed the different phases.

TABLE 3

Based on our findings, we see that there are several differences between companies as can be expected. Regarding Company A, we found notions for all phases in this Table, whereas for both Company B and C we found notions to only partly to phases 1 and 2. Especially there's room for improvement when it comes to measurement of user experience, customers' readiness for user experience, and experiential goals. However, there were some actions in explicating UX and customer benefits into value proposition even though the other items in phase three did not realize in interviews. One notion that seem to affect the results is "User experience maturity" of an industry – all industries are not in equal phase and factors of competition are different. Thus further studies would attempt to distinguish different B2B industries based on their user experience readiness.

The examples of how interviewees addressed the different phases provide guidelines for building the value argumentation in other companies, as well. As the system is used in the customer company, the usage and related user's experiences have outcomes or consequences. These consequences (benefits or costs) can be identified on at least two levels: the user and the customer. Examples on user level effects could be related to "efficiency," "work satisfaction," and "professional pride" created by the positive experiences with the technology, whereas on customer level this could be effects of "productivity," "competitiveness," or "brand image." These consequences or outcomes could be used in the value proposition of the provided solution or offering, also in the case of user experience. It has been proposed that end-user's positive experience creates both tangible and intangible benefits in the B2B domain (Vuolle, 2011). The impacts or consequences of user's positive experience, if the impacts are perceived positively by the customer and have positive impacts also for the customer, are potential sources of value creation for the customer. These identified benefits and positive impacts can be used in crafting the value propositions and communicating the value created by enhanced user experience.

Based on a literature review, we created an initial conceptual framework for connecting user experience with customer value. It should be noted that the presented framework is tentative, and it has so far no empirical proof within this context, other than the interviews made within the case companies. Further empirical studies are needed both for user experience as well as for identifying the created and perceived value of user experience in the MEI and other B2B domains. This framework, with future elaborations and more detail, aims to help the following groups:

1. Researchers, when conducting studies on user experience and customer value;
2. Suppliers in crafting the value argumentation with user experience, as well as;
3. Suppliers in identifying system features and functionalities, user characteristics, qualities and other experiential dimensions that affect user experience and provide value for the customer to support innovation and other R&D activities within the supplier company.

A few limitations deserve attention. Our data is based on access and snowball sampling; thus, further studies should use a theoretical sampling to confirm (or discard) our explorative findings. Also, the linkages in our theoretical framework are still tentative, though we found evidence from empirical data. The created initial conceptual framework aims to be used as a tool both for studying the link between user experience and customer value, as well as for crafting the value proposition and communicating the value for the customer. Thus, further empirical studies are needed to validate the presented framework. Future studies should also address the topic of contingency affecting the implementation of user experience in B2B business value co-creation. Our findings suggest further research in offering, how to craft the value proposition for co-created offerings in wider B2B markets, and how to measure and demonstrate benefits of the intangible characteristics of the offering. In addition, the metal and engineering industry faces the threat of emerging new business models (see Sabatier et al., 2012), thus necessitating studies on changing and implementing novel business models to strengthen and defend a firm's competitive position within the industry.

6 Conclusions

Our results demonstrate that user experience is considered to be a differentiating factor that is expected to create competitive advantage for the supplier in the metal and engineering industry domain. User experience was perceived as 1) a differentiating factor, 2) a way to build value propositions, and 3) an innovation catalyst in R&D.

The paper has two main contributions First, the paper points to ways in which suppliers address the challenges of creating value argumentation by adapting the dimensions of value-based selling behavior. Especially identifying current position before moving forward was found important, thus an addition to existing three phase model was done. Second, the paper describes a conceptual framework that connects user experience to customer value. This framework aims to help to craft the value argumentation with user experience, provide a theoretical background for studies on created customer value by user experience, and aid in innovation and other R&D activities to identify user-experience-related issues in order to create perceived value for the customer.

In addition, three user-related trends were identified that serve to push for innovation with user experience focus: 1) the increase in maturity of technologies and new interaction types that raise the expectation levels of users and customers towards experiential dimensions, 2) expected changes in work force and users, such as decreasing educational levels, and 3) the need for improvements in efficiency or productivity that could be supported by better user experience. However, interviewees considered the building of value argumentation in relation to user experience to be a challenge. Turning user experience into a solid value argumentation calls for new competencies both in crafting the value proposition as well as in communicating it.

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TABLES AND FIGURES

Table 1. Linking value-based selling and different types of customer value (modified and extended from Terho et al. (2011).

	Value-based selling phase	Description of actions to realize	Types of customer value
1.	*Understanding the customer's business model*	Understanding that the customer's business logic and goals go beyond customer expressed needs in selling	Identifying substantial drivers of value in the customer's business; in respect to *experiential* values
2.	*Crafting the value proposition*	Active identification and crafting offerings that have the potential to impact the customer's business profits based on customer participation and accumulated knowledge	Quantifying the size of the offering's value opportunity to the customer; to increase fit with *expectation* value
3.	*Communicating value*	Credible demonstration of how the offering can contribute to the customer's business and business profits	Presentation of quantified evidence, openness, and explicit minimization of customer risk; in respect to *evaluation* value

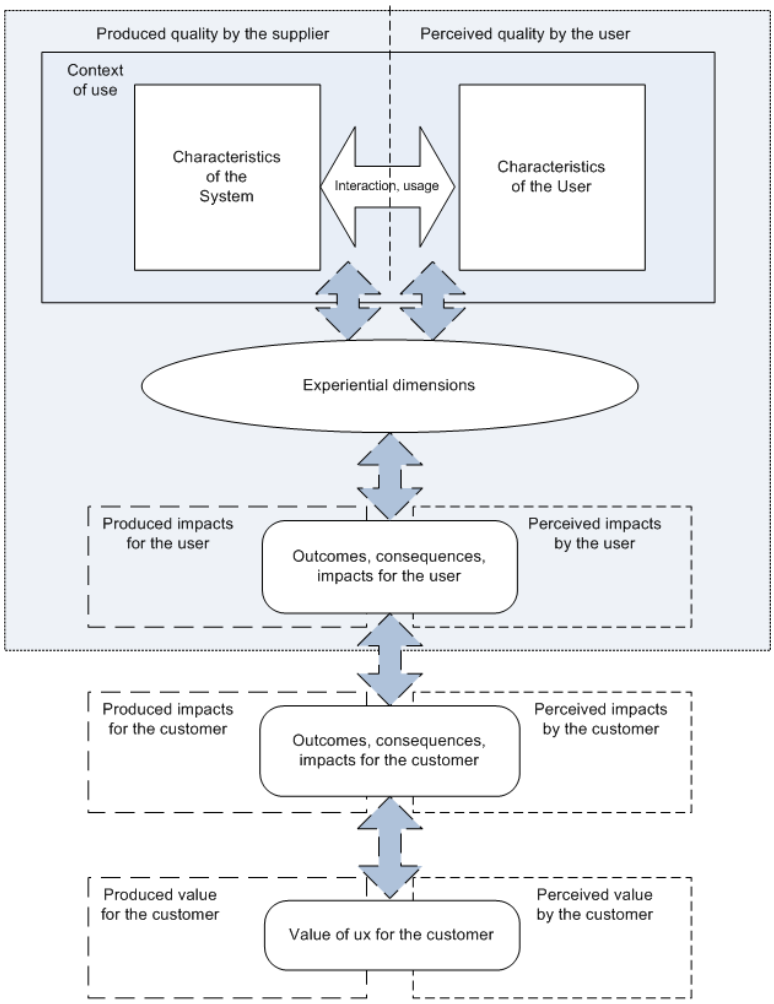

Figure 1. The initial conceptual framework for linking user experience and customer value (development based on Jumisko-Pyykkö, 2011; Mahlke et al., 2007; Woodall, 2003).

Table 2. Key characteristics of the case companies (to maintain anonymity, a more detailed description cannot be provided).

Company	Number of interviewees	Area of business	Net sales (MEUR in 2011)	End-users
A	4	Solutions for moving people inside buildings	5,200	Ordinary people, employees, rescue personnel
B	6	Manufacturing systems for MEI companies	80	Employees
C	3	Solutions for lifting and moving heavy loads	1,900	Employees, externals bringing the loads

Figure 2. Comparison of interfaces of traditional teach pendant (left) and the novel player interface (right).

Table 3. Findings on how interviewees addressed the crafting of value proposition with user experience.

#	Phase description	Issues raised by the interviewees	Companies from which interviewee(s) mentioned the issue		
			A	B	C
1	Identifying current position in turning user experience into value proposition	Customer and user are separated in B2B context	x	x	x
		Measurable impact of user experience for the customer challenging to show as numbers	x		
		Costs are minimized at time of purchase	x	x	x
		There are differences between cultures in relation to the importance of user experience	x	x	x
		Customer may not be ready to discuss about user experience as value proposition	x	x	
2	Understanding the customer's business model	Understanding of customer's business logic and goals is essential	x	x	x
		Understanding of customer's business context is important	x	x	x
		Understanding of customer's experiential goals and values is important	x		
3	Crafting the value proposition	Showing long-term impacts (benefits) of the user experience focus in the offering	x	x	x
		Using supplier's internal knowledge on users (e.g. R&D, standards, regulations, requirements)	x		
		Providing value argumentation to customers so that they can use it for their customers	x		
4	Communicating value	Improving the competence of the sales personnel to communicate value of user experience, not to use only technological specifications and price	x		
		Building trust in own value argumentation	x		