DISCUSSION FORUMS – FROM IDEA CREATION TO INCREMENTAL INNOVATIONS. FOCUS ON HEART- RATE MONITORS

Piia Haavisto

Sarja/Series A-8:2014

Turun kauppakorkeakoulu
Turku School of Economics

Custos: Postdoctoral Research Fellow Birgitta Sandberg
Turku School of Economics

Supervisors: Professor Niina Nummela
Turku School of Economics

Postdoctoral Research Fellow Birgitta Sandberg
Turku School of Economics

Pre-examiners: Senior Researcher, Docent Arto Ojala
University of Jyväskylä

Professor Liisa-Maija Sainio
Lappeenranta University of Technology

Opponent: Professor Liisa-Maija Sainio
Lappeenranta University of Technology

ISBN 978-952-249-361-3 (print) 978-952-249-362-0 (PDF)
ISSN 0357-4652 (print) 1459-4870 (PDF)

Publications of Turku School of Economics, Series A

Suomen yliopistopaino Oy – Juvenes Print, Turku 2014

ABSTRACT

Discussion forums – from idea creation to incremental innovations: Focus on heart-rate monitors.

The main purpose of this study is to analyse how discussion forums can be employed for incremental idea generation. The first and second sub-objectives concern the extent to which discussion forums contain potential ideas for incremental product innovation and the potential of discussion forums in creating consumer value. The third and fourth sub-objectives show how consumers should be integrated into idea generation and how consumer emotions towards an innovation evolve along the online discussion.

The theoretical framework of the study includes consumer integration strategy especially during the idea generation phase, the creation of consumer value in conjunction with consumers and emotions. The empirical data comprised 2,187 discussions gathered from 28 either general or company maintained forums related to heart rate monitors.

Discussion forums contain possible ideas for incremental product innovation. Consumers are eager to innovate and share their expertise for product improvements that would benefit their training. Discussion forums contain basic, performance and excitement factors, employed here to define consumer value. These value attributes exist among unselected participants in all studied forums. The ideas discussed by participants mainly relate to performance factors that concentrate on efficient training and training results.

Online forums can be utilised in product innovation without any company intervention, although not very efficiently. Either a closed forum established for innovation purposes with both company representatives and consumers interacting or a closed or open forum with a product innovation evangelist directing the discussions are promising methods for consumer integration. The role of an evangelist is especially important when a discussion takes a negative turn. Negative emotions spread easily among consumers, changing from disappointment with a product to anger directed at the company unless the company reacts fasts. Therefore it is important not only to handle consumer complaints but also to rapidly address problems that evoke negative emotions.

Keywords: idea generation, product innovation, discussion forums, consumer value, emotions

TIIVISTELMÄ

Keskustelufoorumit – ideoiden luomisesta vähittäisiin innovaatioihin: Tarkastelukohteena sykemittarit.

Tämä tutkimus käsittelee keskustelufoorumeiden hyödyntämistä vähittäisten innovaatioiden ideointiin. Tutkimuksen alatavoitteet käsittelevät potentiaalisten tuoteinnovointi-ideoiden esiintymistä keskustelufoorumeilla, keskustelufoorumeiden potentiaalia kuluttajien arvon tuottamisessa, kuluttajien integrointia ideoiden kehittämiseen keskustelufoorumeilla sekä kuluttajien tunteiden kehittymistä nettikeskustelun aikana.

Tutkimuksen teoreettinen viitekehys keskittyy kuluttajien integrointistrategiaan ideoiden kehittämisvaiheessa, arvon luomiseen yhdessä kuluttajien kanssa sekä tunteisiin. Empiirinen aineisto koostuu 2178 keskustelusta 28 yleiseltä tai yrityksen ylläpitämältä sykemittareihin liittyvältä keskustelufoorumilta.

Keskustelufoorumit sisältävät mahdollisia ideoita vähittäisiin tuoteinnovaatioihin. Kuluttajat ovat innokkaita jakamaan osaamistaan saadakseen parempia tuotteita harjoittelunsa tueksi. Keskustelufoorumeilta löytyy vähimmäisvaatimukset täyttäviä perustekijöitä, suoritukseen liittyviä tekijöitä sekä yllätystekijöitä, jotka kaikki määrittävät kuluttajan kokemaa arvoa. Ideat, joista kuluttajat mieluiten keskustelevat, liittyvät pääasiassa suoritustekijöihin: erityisesti tehokkaaseen harjoitteluun ja harjoitustuloksiin.

Keskustelufoorumeita voidaan käyttää tuoteinnovointiin ilman yrityksen osallistumista keskusteluihin, joskin suhteellisen tehottomasti. Suljettu innovaatiofoorumi, jossa kuluttajat ja yrityksen edustajat ovat vuorovaikutuksessa, on selkeästi tehokkaampi vaihtoehto. Myös ”tuoteinnovaatioevankelistan” ohjaama suljettu tai avoin foorumi on lupaava vaihtoehto. ”Evankelistan” rooli on erityisen tärkeä keskustelun muuttuessa negatiiviseksi. Negatiiviset tunteet leviävät helposti kuluttajien keskuudessa muuttuen tuotepettymyksestä vihaan yritystä kohtaan, ellei keskusteluun puututa nopeasti. Tästä syystä sekä kuluttajien valitusten että negatiivisia tunteita aiheuttavien ongelmien nopea ja tehokas käsittely on äärimmäisen tärkeää.

Avainsanat: tuoteideoiden kehittäminen, tuoteinnovointi, keskustelufoorumit, kuluttajien kokema arvo, tunteet.

ACKNOWLEDGEMENTS

Several people were involved in this thesis process. I am grateful to my supervisors Postdoctoral Research Fellow Birgitta Sandberg and Professor Niina Nummela for invaluable and detailed comments. Your input certainly improved my thesis, as well as my skills as a researcher. It was also a pleasure to write the fourth article together with you, Birgitta. At this point, I realise that it should have been the first one that I wrote.

I would also like to give my appreciation to my pre-examiners Professor Liisa-Maija Sainio and Senior Researcher, docent Arto Ojala for their thorough and detailed evaluation of my thesis. I appreciate their constructive comments, and although no changes were requested now, the comments will certainly benefit my future research activities. I also wish to express my thanks to Professor Liisa-Maija Sainio for accepting the invitation to act as the official opponent of my thesis.

I would like to thank Turku School of Economics for providing me with a scholarship for one month and the Turku School of Economics Support Foundation for financial support. In addition, secretary Auli Rahkala-Toivonen deserves special thanks for helping me with the layout of the thesis.

I want to thank Janne Kallio, Head of Digital Marketing at Suunto for valuable information about product development in Suunto and for his positive attitude towards the use of Suunto´s discussion forums for this PhD thesis. I would also like to thank sports and exercise physiologist and coach Eddie Fletcher for his practical advice and encouragement.

I am thankful to my colleagues at Laurea University of Applied Sciences for support and encouragement during the thesis process. I am grateful for Development manager Arja-Helena Meronen for getting me started, as it was actually never my intention to write a PhD thesis. Thank you, also, for pushing me to study for the exams and participate in compulsory courses at a very early stage of my studies. I am thankful to Director Seija Paasovaara for introducing me to the NVivo programme, and offering support throughout the study process. It was especially nice to hear about similar experiences and obstacles that were overcome. Most of all, I wish to express my gratitude to my colleague Senior Lecturer Paul Dickinson for commenting on the content and correcting the English in my first three articles and his encouragement during the more difficult parts of the process. I appreciate the numerous discussions we had related to our thesis processes.

Most importantly, I want to express my gratitude to my friends and family for their support. I wish to thank my friend, Maija-Liisa Mattinen for advice and encouragement. I especially want to thank my mother and father, Hilkka and Alpo Mustonen for their unconditional support and belief in me. I consider myself fortunate to have a large and supportive family that never expressed any doubts about me accomplishing this process.

Finally, my deepest gratitude goes to my dear husband, Ari. Thank you for all the technical help with figures and tables, and more importantly for not letting me stop writing the thesis, when I was seriously doubting the sense of the whole process. Your love, encouragement and unswerving support made all the difference. Now that this thesis is finished, think about all the time and energy that is free for other projects!

Kirkkonummi, 14th May 2014

Piia Haavisto

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1 INTRODUCTION

1.1 Product innovation as a research topic

Schumpeter (2008, 65)[1] argues that innovation is not of intellect, but of will. The concepts of "innovation" and "invention" are often presented together or even as synonyms (Fagerberg 2005, 4). However, most researchers distinguish innovation from invention by explaining that innovation is concerned with the commercial and practical application of ideas or inventions (Trott 2005, 13–14) or creating and delivering new consumer value in the market place (Carlson & Wilmot 2006, 6). Invention can also be defined as action actively directed at the discovery of new and useful knowledge on products and processes (Schmookler 1957, 321), although it should be noted that an invention does not necessarily lead to an innovation (Schumpeter 1927, 293). As this study concentrates on product improvements and consumer value, the term innovation is employed throughout the study.

Consumers' perception of newness is essential in product innovation, not the actual newness (Robertson 1971, 6; Rogers 2003, 12). A minor but successful improvement in a product can make it look or feel like new, thus making it desirable to consumers. Product innovations, either totally new products or improvements, can be divided into radical and incremental, of which incremental innovations are bases for continuous improvements to existing products (Hilzenbecher 2005, 49) or minor changes in attributes of consumers' perspectives (Hoonsopon & Tuenrom 2009, 155; Reichwald et al. 2007, 21; Schilling 2008, 43–44). Incremental innovations might not be new or exceptional; they might only comprise minor adjustments or changes to existing practices (Schilling 2008, 43–44) with a lower risk than that attached to radical innovations (Prandelli et al. 2008, 2). The majority of companies' innovations are incremental, thus involving products that already have an existing consumer base (Ulwick 2005, 7). Although improvements might be minor, incrementally new products can have very significant economic consequences (Schulze & Hoegl 2008, 1743).

As presented in table 1, different characteristics have been related to the definitions of innovation and incremental innovation. The table shows both the

[1] Originally published in 1951

different emphasis relating to the concept of innovation and that essential content perceived in innovation activity varies. Quite often, innovation is linked with creativity (e.g. Amabile et al. 1996, 1158); however, it can also relate to consumer value (Carlson & Wilmot 2006, 6) or, for instance, market eligibility (Seely 2003, ix). Seybold (2006, 15) argues that innovation emerges naturally when there is a difference between consumers' needs and products that exist on the market, whereas Trott (2005, 15) emphasises the importance of the conception of new ideas as the starting point of innovation.

Table 1 Definitions of terms for innovation and incremental innovation.

Innovations in general		
Author	**Essential content**	**Definition**
Amabile et al. (1996, 1154)	Creativity	Innovation is the successful implementation of creative ideas within an organisation.
Carlson & Wilmot (2006, 6)	Consumer value	Innovation creates and delivers new consumer value in the marketplace.
Fagerberg (2005, 4)	Practice	Attempt to carry invention out into practice.
Johne (1994, 47)	Improvements and radical alterations	Includes both improvements and radical alterations.
Robertson (1971, 6) Rogers (2003, 12)	Newness	Perceived newness by the consumer is essential.
Seely (2003, ix)	Market eligibility	Innovation is invention implemented and taken to market.
Seybold (2006, 15)	Consumer needs and wishes	Occurs naturally as a result of the structural or creative tension between what consumers want and what exists on the market.
Trott (2005, 13)	Commercialisation	Innovation is concerned with the commercial and practical application of ideas or inventions.
Incremental innovations		
Hilzenbecher (2005, 49)	Continuity	Continuous improvements to products.
Ulwick (2005, 2)	Improvements	Innovation results from improvements made to existing products and services.
Hoonsopon & Tuenrom (2009, 155) Schilling (2008, 43–44) Reichwald et al. (2007, 21)	Adjustments	Minor changes or adjustments in attributes in the consumer's perspective
Schilling (2008, 43–44)	Adjustments	Not particularly new or exceptional, minor adjustments to existing products.

Product improvement ideas are typically presented in discussion forums that offer large amounts of unstructured and undirected communication. As such, they are a relevant source for incremental product innovation and, therefore, this study only concentrates on incremental product innovation. As the study is conducted by observing consumers in discussion forums over a particular time period, it is not possible to analyse the continuity of specific product improvements. Through combining the other criteria presented in table 1, incremental innovation is understood in this study as improvements and adjustments to existing products.

Different models for product innovation process are presented in table 2. Although the definitions for the concrete phases differ, the basic progression is rather similar. Most of the models begin with idea generation, proceed to idea development and end with market launch. To be able to better synthesise the various models, the different stages have been marked with different colours: the idea generation stage is marked with light grey in all the presented models, the development stage with medium grey and the market launch with dark grey. In addition, it needs to be remembered that product development is a continuous process and, especially in case of incremental innovations, that the idea generation stage is also typical after market launch as new product improvements and modifications are made.

Table 2 Phases of the product innovation process

Stage-gate innovation process (Cooper 1990, 46)								
Preliminary assessment	Definition	Development	Validation	Commercialisation				
Product innovation process (Rogers 1983, 135–148)								
Recognition of a problem or need	Basic and applied research	Development	Commer-cialisation	Diffusion and adop-tion	Conse-quences			
Proactive new product development process (Urban & Hauser 1993b, 38–47)								
Opportunity identi-fication	Design	Introduction	Life–cycle management					
Virtual product development process (Ernst et al. 2004, 196)								
Idea generation and evaluation	Concept building and project selection	Development	Testing	Market launch				
Product innovation process (Herstatt & Verworn 2003, 9)								
Idea generation and evaluation	Working with the concept, product planning	Development	Building the prototype, pilot use, testing					
Cyclical product innovation process (Wahren 2004, 22–23)								
Preparatory phase	Idea generation	Idea evaluation	Idea implementation					
New product development model (Trott 2005, 212)								
Idea genera-tion	Idea screening	Concept testing	Business analysis	Product develop ment	Test mar-keting	Commer cialisa-tion	Monitor-ing and evalua-tion	
Innovation process in phases (Soll 2006, 12)								
Idea genera-tion	Concept devel-opment	Development	Product test-ing	Market launch				
Product innovation process (Wecht 2006, 149)								
Idea collection or de-velopment phase	Further development and speci-fication of ideas	Shaping and commer-cialisation						
Product innovation process (Soukhoroukova 2007, 3)								
Idea genera-tion	Product con-cept testing	Product devel-opment	Product tests	Product launch				
Product innovation process (Reichwald et al. 2007, 20)								
Idea genera-tion and eval-uation	Concept presenta-tion	Development	Building the prototype	Market launch				
Key stages in the innovation process (Prandelli et al. 2008, 3)								
Creating the idea	Selecting ideas	Developing prototypes	Developing the product	Launch				
Consumer integration in innovation process (Daecke 2009, 13; Reichwald & Piller 2006, 44)								
Idea gener-ation	Concept develop-ment	Proto-type	Product / market testing	Market launch	Com-pletion	Fit-ting	Market-ing	After sales
Synthesis of innovation process models								
Idea generation	Development	Market launch						

As shown in table 2, there are many different classifications to the innovation process, the most typical alternative comprising four to five phases and being linear by nature. The stage-gate process presented by Cooper (1990, 46) is an example of a linear process, in which the innovation process is divided into predetermined stages. In this model, each stage is understood as a gate at which the decision on whether the process should be continued is made (Cooper 1990, 46).

Although most of the models are linear, Wahren (2004, 22–23) presents an exception in a form of a cyclical product innovation process, in which the phases termed idea generation, idea evaluation and idea implementation follow each other in a circle, but are not strictly separate. Successful innovation requires creative space and surprises; therefore, the process cannot be too precisely predetermined or rigidly planned. The process is completed by a preparatory phase that is not part of the actual circle, but forms the background for a successful product innovation process by helping to check the innovation capability of the company and plan the actual process (Wahren 2004, 23).

Even though the cyclical process might better describe the complex reality of product innovation, the linear approach (as seen in table 2) is extensively employed. This approach is equally employed in studies relating to active consumer integration (e.g. Herstatt & Vervorn 2003; Reichwald et al. 2007; Wecht 2006) and online product innovation (e.g. Bartl 2006; Prandelli et al. 2008; Soll 2006).

In general, the product innovation literature has concentrated on the later stages of the product innovation process and studied the question concerning how recognised opportunities can be exploited (e.g. Cooper 1990; Trott 2005; Urban & Hauser 1993b). During the later stages, the information is perceived as more reliable (Verworn & Herstatt 1999, 1) and, therefore, it interests many researchers and companies. However, if possible, specifying a product clearly during the early stages of the innovation process seems to lead to cost effective and efficient work during the later stages (Reichwald et al. 2007, 23).

1.2 Integrating consumers into product innovation

According to product innovation researchers, understanding and meeting consumer needs are among the most important success factors for new products (Cooper 1994, 61; Cooper & Kleinschmidt 1986, 72; Hauser et al. 2006, 688; Hayenga 1997, 1; Hoffman 2007, 321; Hoffmann 2006, 2; Wecht 2006, 17; von Hippel 2001, 247; von Hippel & Katz 2002; Zirger & Maidique 1990, 871). The greatest challenge in product and service innovation is to identify both existing and future consumer needs (Soll 2006, 8). Therefore, in addition

to knowledge on former experiences, expectations on how a product will be employed (Rohracher 2005, 13) and its place on the market (Heiskanen & Lovio 2007, 5; Tinz 2007, 1), accurate information on consumers' needs and the context of use (von Hippel 2001, 84–85) are essential

Piller (2006, 1) describes the traditional innovation process as a relatively closed system in which new products and services result mainly from internally operated and controlled activities. However, many companies have already recognised the importance of involving their consumers in their processes and creating networks of experts to improve the product innovation process. For example Finnair asked consumers to test airplane seats[2] that will be in use in 2014, and a Finnish travel agency, Aurinkomatkat[3], recently launched a competition to determine the most desired new travel destinations and the best service packages for them.

Innovative consumers typically form a rather loosely coordinated network around a company (Chesbrough 2003), especially in social media (Piller 2006, 85). Anyone can participate in social media discussions, and it is impossible to know whether they have a customer relationship with the focal company. Most typically, they are consumers that either use the product in question or merely have a general interest in it. Therefore, the term consumer is employed in this study also to cover the terms customer, user, client and buyer, which are often employed as synonyms.

The main challenge for a company lies in its ability to channel the enthusiasm and creativity of consumers in social media and the inspiration of its company professionals into a conveyable engineering result that takes business interests into account (Van Rompaey et al. 2005, 1). Both the company and its customers have their own perceptions on how a sociable, likable and usable product can be planned and built, although, as borders are disappearing, they are expected to depart from their traditional positions. Closer consumer integration in product innovation will benefit the company; the greater their involvement with the product, the more pronounced the impact on consumers' attitudes towards the company (Nambisan & Baron 2007, 49).

Consumer integration entails collective responsibility, and refers to the company's overall attitude towards consumer involvement (Ettlie & Reza 1992, 797–800). In the literature, consumer integration has been employed synonymously with the concepts of cooperation and collaboration (Antola

[2] Finnairin blogi (2013)
[3] Aurinkomatkat blogi (2013)

2009, 28), although there are slight differences[4]. Consumer integration emphasises the active role of consumers in the innovation process, in which both the company representatives and consumers work closely together to solve consumers' problems (Daecke 2009, 12; Prahalad & Ramaswamy 2004a, 5). Grüner & Homburg (2000, 12) encourage companies to interact with consumers during the early and later stages of the innovation process. Although they found no benefits in interacting with the consumers during the medium stages of the innovation process, they emphasise the importance of consumer integration whereby consumers are kept informed and interested in the process to avoid their knowledge and contribution being lost.

In this context, the definition "open innovation" has been actively discussed. The nature of social media, its openness and concentration on interactivity has enabled anyone to participate in the innovation process. Seybold (2006, 18) describes open innovation with the definition "outside innovation", emphasising the importance of developing a deep understanding on consumers' tastes and preferences, and also realising what consumers want to accomplish (Seybold 2006, 18; Ulwick 2005, 23). Open innovation means idea creativity, sharing knowledge and solution information in a clearly bigger group (Piller 2006, 90); however, this also exposes information and plans to both consumers and competitors.

As shown in figure 1, cooperation with consumers in product innovation is often linked with early stages of the product innovation process but is, however, also important in later development phases (Bartl 2006, 2; Carbonell et al. 2009, 539; Cooper 1994, 66; Cooper & Kleinschmidt 1995, 439; Wobser 2003, 53). Consumer activity is at its highest at the beginning of the process; however, afterwards, their active participation significantly reduces, unless it is encouraged and supported by the company or by other participants. In addition to idea generation, consumers can also be employed in the development of chosen ideas, choosing and concretising ideas, discussing and improving optional solution details, preparing for the market launch, development of marketing concepts (Füller 2006, 639; Hoffmann & Konrad 2007, 14;), evaluating prototypes or conceptualising products (Franz & Wolkinger 2003, 3; Henkel & Sander 2003, 74), testing products and providing end user support (Nambisan 2002, 392) and developing new products (Luthje & Herstatt 2004, 555). In addition to the product innovation process, consumers can also reflect their consuming habits and make product innovators aware of their needs,

[4] Collaboration aims at achieving creative results and new product improvement ideas (Kvan 2000, 409) in a persistent close dialogue (Prandelli et al. 2008, 14), whereas cooperation relates to informal relationships that can exist without a defined mission or structure (Mattessich & Monsey 1992, 22) and are only short-term (Keast et al. 2007, 17).

competing products, different forms of usage, environmental factors and new handling methods (Hoffmannn & Konrad 2007, 12).

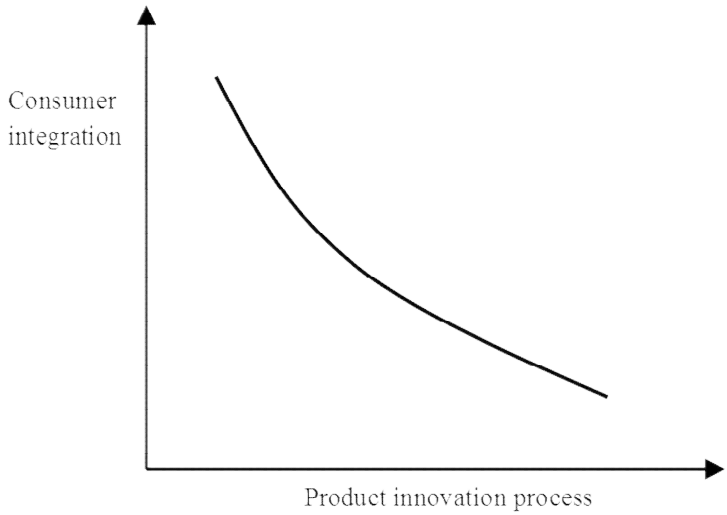

Figure 1 Consumer integration over the product innovation process

Incremental innovations mean constant product improvements or minor adjustments. For instance, Google AdSense and GoogleEarth are results of continuous improvements, failures, successes and consumer feedback (Wojcicki, 2011). Therefore, the consumer integration process is different, as shown in figure 2. A product that has been launched onto the market starts a new idea generation phase, as consumers voice their ideas for product improvements and adjustments. As such, consumer integration appears as a series of never-ending waves.

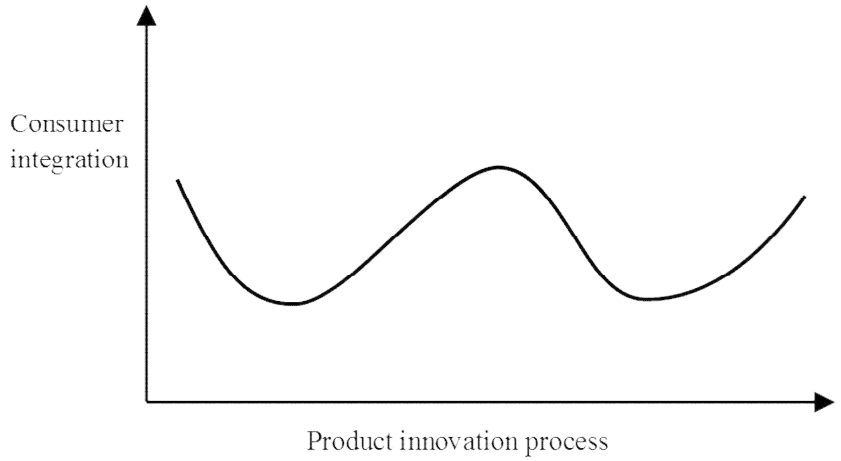

Figure 2 Consumer integration over the incremental product innovation process

In comparison with the situation shown in figure 1, in which consumers were mainly needed at the beginning of the product innovation process, figure 2 emphasises the continuous need for consumer integration. As incremental product improvements follow each other and new needs emerge, consumers are constantly needed to put forward their opinions and ideas.

In relation to online consumer integration, definitions such as co-creation and consumer involvement have become popular. In co-creation, the consumer is perceived as an active collaborator over the whole innovation process, stating ideas and sharing consumption experiences (Kristensson et al. 2007, 475–476). Online communities can have both consumers and manufacturers as members, of which at least some reveal and discuss ideas that the others find to be of interest (von Hippel 2005, 94). Lundkvist & Yakhlev (2004, 249) emphasise the involvement of both consumers and company professionals: new ideas are jointly co-created and both sides are committed to the action. Here, the online platforms and applications enable companies easily to change traditional one-way interactions to a real conversation with consumers, also adding the social aspect, desired by consumers, to the interaction (Sawhney et al. 2005, 2).

The definition consumer co-creation can also be considered a strategy in open innovation with consumers. Traditionally, consumer integration was perceived as cooperation with innovative and motivated consumers who were eager to innovate anonymously and without any or very little company interaction, whereas, in open innovation, companies and consumers work closely together (Martini et al. 2012, 2). Companies stock the online forums with useful tools and infrastructure that increase the speed and effectiveness with which the consumers can develop and test their innovations (von Hippel 2005,

93). It needs to be remembered, however, that the main motivating factor in open innovation is the creation of value in the form of improved products (Sawhney et al. 2005, 6). Value creation will be further discussed in subsection 2.4.

Consumer integration has definitely interested researchers and the body of literature available on it is extensive. The new social media environment has, however, brought interesting new possibilities to the discussion. Weber (2009, 15) emphasises the role of consumers in social media: the consumer is in control. In addition, participants in discussion forums expect non-commercial interaction between members, not company interventions (Pitta & Fowler 2005, 271). Consumer integration does not exist without company intervention in some form. However, in social media, company intervention per se can even have very negative effects on the company. Social media concerns interaction between individuals, and direct company intervention can cause very negative outbursts, especially if the intervention is regarded as advertising or promotion. Despite their importance, these aspects have not been given much attention by researchers.

Intervention is accepted from individuals, even experienced professionals, offering help and guidance (Pitta & Fowler 2005, 271, in this study termed social media evangelists. Social media evangelists are mentioned in the social media marketing literature and are described as fanatical consumers ready to act as company evangelists and spread positive word-of-mouth on its behalf (Dwyer 2007, 76). During this study, a suitable definition for a product innovation evangelist in social media will be sought, with the goal of promoting consumer integration in idea generation. Social media will be further discussed in the following subsection.

1.3 The potential of social media in product innovation

Social media is tightly linked with Internet-based applications that are planned for online conversation, socialising and networking, and are based on Web 2.0-technologies (Ahlqvist et al. 2007, 13). The applications are at least partly based on user-generated content (Kangas et al. 2007, 12), with ratings, reviews, comments, voting processes and different assessments being typical (Evans 2008, 37). Social media concentrates on interaction between people; it means sharing information and experiences (Evans 2008, 31). In addition to its informative side, the social aspects are also often emphasised (Hintikka 2007, 25). Characteristics for social media are participation, openness, conversation, community and connectedness (Mayfield 2008, 5), and it is based on natural

and genuine conversation between individual people concerning mutual interests (Evans 2008, 38).

The popularity of social media can be partly explained by the potential for everyone to publish and participate. Lietsala & Sirkkunen (2008, 139) emphasise the popularity of sharing personal stories, photos and videos in social media, and the participant's secret wish to become an unofficial journalist. Most social media applications are easy to use and do not require any specific technical skills or equipment, a computer or a mobile phone is sufficient. Thus, it is very easy to stay connected and update profiles, regardless of physical location or time. Social media applications are constantly changing with new features being offered and novel applications emerging. Currently, social networking sites are among the most popular social media applications in the United States and Europe, especially Facebook, Twitter and LinkedIn[5], although other applications such as blogs, discussion forums, wikis, virtual worlds and photo, audio and video sharing are also widely employed.

Changing social, economic and technological factors, and also the rapid development of social media, have created new possibilities to both monitor and determine consumer needs and preferences. The distance between a company and consumers has been considerably reduced and the speed of interaction and feedback has increased rapidly. The main challenge for companies lies both in attracting and keeping consumers interested in their products within the rapidly changing social media environment. Companies should not only determine consumer preferences and needs, but also understand and predict consumers' responses. Consumers are not only a relevant source of information on consumer preferences, their wider knowledge can easily be utilised through interaction. Thus, the high interaction ability of personnel positively contributes to cooperation between the company and innovative consumers (Lettl 2007, 69). Although consumers also innovate independently in online forums, company intervention is required at times. Participants do not only originate innovative ideas for new products but also employ their creativity to modify or individualise existing products (Jawecki et al. 2011, 153).

Online forums and discussion forums, and also virtual forums, online communities and virtual communities, are often employed as synonyms. However, there are slight differences between definitions relating to forums and communities, as shown in table 3.

[5] Top 15 most popular social networking sites (2013)

Table 3 Definition of discussion forums and other related terms

Name	Essential content	Source
Discussion forums / online forums	Need for sharing and finding information.	Hagel & Amstrong (1997, 143)
	Social interaction and sense of community.	Hagel & Amstrong (1997, 143)
	Special technical platform.	Leimester & Krcmar (2004, 49)
	Potential to discuss and post content concerning a special theme.	Cong et al. (2008, 1)
	Private interests.	Hagel & Armstrong (1997, 134–135)
	Emerge around a certain topic or interest.	Hienerth & Lettl (2011, 177)
	Participants share a hobby.	Herstatt & Sander (2004a, 9)
	Participants share an interest, need, information exchange or product.	Preece (2000, 10)
Virtual communities / online communities	Opportunity to share a sense of community with like-minded strangers, regardless of their location.	Hagel & Amstrong (1997, 143)
	Special shared interest.	Hagel & Amstrong (1997, 143)
	Potential to form webs of personal social relationships on the Internet.	Rheingold (1993, 413)
	A special social group with the same need for information and interaction.	Leimester & Krcmar (2004, 48–49)
	Build trust and a shared idea or goal.	Leimester & Krcmar (2004, 48–49)
	Participants show commitment by regular and frequent visits.	Ridings & Gefen (2004, 2)
	Groups of people who meet in electronic forums and form a social organisation.	Kling & Courtright (2003, 221)
	A virtual space with integrated people, common goal and platform, where people give and get support and information.	Preece (2000, 10)
	Groups of businesses, consumers and company professionals with shared interests, interacting on the Internet.	Cothrel (2000, 18)
	A union between individuals or organisations with shared values and interests interacting regularly online.	Schubert & Ginsburg (2000, 2)

Discussion forums can be either private, usually free for everyone to participate, or company-owned, existing on companies' websites. Hagel & Amstrong (1997, 134–135) divide forums between consumer-to-consumer and company-to-company forums, from which the former are based on the participants' private interests and motives, whereas the latter relate to positions at

work (e.g. a forum for secretaries), specific companies or company groups. Consumer-to-consumer forums typically emerge around a particular topic of shared interest (Hienerth & Lettl 2011, 177) and are usually socially oriented with the participants sharing a common hobby (Herstatt & Sander 2004a, 9), interest, need, information exchange or product (Preece 2000, 10). Common to all discussion forums is the need for finding and sharing information and also social interaction. Participants are typically drawn by the opportunity to share a sense of community with like-minded people (Hagel 1997, 143) with the help of a technical platform (Leimester & Krcmar 2004, 49). Consumers meet in virtual communities and exchange experiences concerning products, services and their usage, share ideas for their further development (Jawecki et al. 2009, 1; Herstatt & Sander 2004a, 2; Wecht 2006, 135) and give and receive information on topics in which they are interested (Sicilia & Ruiz. 2010, 6).

By communities, researchers mean a rather tight social commitment and employ such words as a "union" (Schubert & Ginsburg 2000, 2), "commitment" (Ridings & Gefen 2004, 2), "sense of community" (Hagel (1997, 143) and "regularity of visits" (Ridings & Gefen 2004, 2). Although Hagel & Amstrong (1993, 3) mentions the words "sense of community" also in relation to discussion forums, the forums are more frequently described as a "shared hobby" (Herstatt & Sander 2004a, 9; Hienerth & Lettl 2011, 177) , "need for information"(Hagel 1997, 143; Preece 2000, 10) and "shared interest" (Hienerth & Lettl 2011, 177). Despite the differences in definitions, both forums and communities are based on similar technical platforms with the same basic idea: participants are allowed sequentially to post topics or comments. Based on the literature review, it can be concluded that clear divisions do not exist, although the definitions are employed to describe a rather similar platform and phenomenon. In this study, the above mentioned definitions are regarded as synonyms. However, throughout the manuscript, the term "discussion forum" is employed due to the nature of the study. The interest lies in any consumer, not those specially chosen or closed communities of innovation.

The nature of the discussion forums poses a challenge for companies: they must remain interesting for consumers to return to the discussions (Antikainen 2007, 16). In addition, content in social media varies from very high to low quality items and, sometimes, even abusive content, which poses another challenge for the company (Agichtein et al. 2008, 1). To date, there are no solutions for solving this problem, as the right for free participation, publishing and voicing opinions is considered very important in social media. Mustonen (2009, 33) mentions failed attempts to control the contents; publishing rights in wikis were restricted to only professional experts, which

caused a lot of negativity in a form of heated discussion on the principles of social media. Eventually, the restrictions were removed.

The permanent nature of written texts is one of the most often mentioned concerns in relation to social media. While they can be referenced later enabling a searcher to find a solution to a problem, the texts can live forever, even against the writer's wishes. In this sense, people can even be abused in different online applications (Scholz 2008, 8) or the texts can be reproduced, altered and put into other contexts (Mustonen 2009, 34).

Due to its rapid development, it is very difficult to predict the future for social media. New applications will most definitely emerge, although their content is yet unclear. Demopoulos (2007, 26) cites vblogs (i.e. video blogs) as an example, but admits that it is too early to state what exactly they will be and how they will be employed. Toivonen (2007, 9) argues that, in the future, people will hop between the real and virtual worlds while working, innovating and socialising, whereas Lietsala & Sirkkunen (2008, 14) perceive future collaboration in social media bringing new and unexpected results. Thus, the main challenge for companies lies in their ability to channel consumers' interest, enthusiasm and creativity into a usable result (Van Rompaey et al. 2005, 1).

This challenge is further fuelled by the fact that innovation in discussion forums is typically not a straightforward process, in which the final solution is posted by one participant, but a long process with a dialogue and many contributors (Jawecki et al 2011, 153). Many companies are interested in social media and its potential and are, therefore, moving towards more open innovation practices that promise easy access to need and problem solving information and, thus, help to create a better fit-to-market. For most companies, the possibilities, rules and also research tools remain unclear and the situation is not made any easier by the changing social media environment. Social media has brought changes to society and changed the traditional consumer role from passive to active, thus enabling companies to face the challenge to interact, to create contacts and maintain meaningful dialogues with consumers. Some researchers state that, as much as possible, information should be observed rather than requested (Franke & Shah 2001, 15); others emphasise the role of interaction and open discussions, even the development of a two-way learning relationship with individual consumers (Prandelli et al. 2008, 15). It is unlikely that relevant information can be found only through observation; some questions or comments are needed to direct the discussions and to obtain the required details. Although company interaction is tolerated only in some forms, Pitta & Fowler (2005, 271) emphasise that a level of consumer tolerance for a company's postings can be built slowly over time.

1.4 The research gap

Consumer integration into social media product innovation is an issue of growing interest among academic researchers (e.g. Bartl 2006; Daecke 2009; Soll 2006). The results of previous studies show that some participants are very knowledgeable and have the expertise to create their own high-quality products (Jawecki et al. 2011 Lettl et al. 2009) and that consumers desire different toolkits for product design (Franke & Piller 2004; Piller & Walcher 2006) and also virtual worlds in which to test product shaping (Daecke 2009). Similarly, idea competitions on the Internet have been found to be beneficial for product concept formation (Soll 2006). At a more abstract level, Wobser (2003) studied the potential to systematise Internet-based consumer integration in product development, this being complemented by Wecht (2005), whose experiments were conducted in an offline environment. Furthermore, Füller et al. (2004, 8) concentrated on community-based innovation, stating that, although it seems very encouraging, there are no trustworthy studies indicating its effectiveness and efficiency for continuous consumer integration. However, none of these describes the use of discussion forums for idea generation.

The consumer's role is a theme actively discussed in previous studies relating to consumer integration in discussion forums. These include studies concentrating on the selection of the best, most innovative consumers (Bartl 2006), lead users (Lüthje & Herstatt 2004) and the active role of consumers (Lettl & Gemünden 2005). In addition, Füller et al. (2007) studied innovation creation in basketball communities and Lettl (2007) contributed to the development of a more systematic approach to identify and integrate capable users into the innovation process. As a result, a need for research on discussion forums relating to tangible products (Füller et al. 2007, 69) and also a requirement for better understanding on how to manage consumer and company interaction in forums was identified (Snow et al. 2012 , 13).

Although the consumer role is a discussed factor in the literature, it does not provide insights on searching for the most desired consumers, in this case innovating consumers on the Internet (Lüthje 2000, 3). However, while only some participants might be capable of creating professional designs, they cannot design in isolation and need input from other, probably less skilled participants in the form of challenging questions, opinions and proposals (Füller et al. 2007, 69); they need their social innovation network (Lettl & Gemünden 2005, 339; Lettl et al. 2009, 252). As the interaction of innovative users with other partners in discussion forums is crucial for the development and diffusion of potential innovations, it is necessary to study all forum participants (cf. Hienerth & Lettl 2011, 191).

The consumer integration literature is primarily based on the company perspective, the company being the initiator that involves consumers in ready-tailored platforms or idea competitions (Daecke 2009; Franke & Piller 2004; Füller et al. 2009; Soll 2006). As an exception, Hienerth & Lettl (2011) studied consumers creating innovations without any company intervention and asking the companies to become involved only at a very late stage in the product innovation process. Both of these methods involve company and consumer intervention; thus, there is a need for observation by the company to source relevant product innovation ideas. This assumption is further supported by Piller et al. (2006) who show the effectiveness of non-company mediated consumer-to-consumer interaction in their study.

The social media product innovation literature is primarily based on the later stages of the product innovation process; for example, prototype or concept testing (Daecke 2009; Herstatt & Sander 2004b; Lettl et al. 2009), shaping individual products (Franke & Piller 2004) and dissemination and product adaptation (Hienerth & Lettl 2011). This picture has been complemented by studies concentrating on the whole product innovation process in social media, its efficient management and also innovation (Füller et al. 2007; Füller et al. 2009) and network and competitive potential (Snow et al. 2012).

Studies relating to the early stages of the product innovation process have concentrated on management practices in social media (Herstatt et al. 2003; Herstatt & Verworn 2003) and in an offline environment (Reichart 2002; Wecht 2005,) and also on some concrete methods for their use, such as idea competitions (Soll 2006) or creating interaction tools (Füller & Matzler 2007). There is, however, no single method that can be recommended to “best” manage the early stages (Herstatt & Verworn 2001, 21) or to reduce uncertainty concerning the market and technology (Herstatt et al. 2003, 19). Thus, studies concentrating on the early stages of the product innovation process do not offer any specific tools for idea generation or give any indication on the existence of incremental product innovation ideas in discussion forums.

Furthermore, studies on the early stages of the product innovation process in discussion forums are related to radical innovations (Füller et al. 2007; Lettl 2007; Lettl & Gemünden 2005). As companies working on radical innovations need to develop a completely different consumer integration attitude than companies that aim at generating incremental innovations (Lettl 2007, 53), there is a need for a study that concentrates only on incremental innovations.

Consumer value has raised interest among researchers in relation to consumer integration and online environments. Pitta et al. (2006) combined consumer value with online relationships, concentrating, however, on marketing and not product innovation. Despite its potential in value creation, product

development has been rather neglected and research has concentrated on market research and marketing activities (Füller et al. 2006, 2).

Academic discussion concerning value creation is centred on creating value in conjunction with consumers (Ramirez 1999; 50) and understanding the new, active, informed and connected consumer role (Prahalad & Ramaswamy 2004a, 4). Previous studies show that value comes from interaction (Woodruff 1997, 151) and that consumers must find the process funny, enjoyable and feel appreciated (Füller et al. 2006, 21). Furthermore, personalised consumer experiences relating to both the process and product usage are key to value creation (Prahalad & Ramaswamy 2004b, 5). As such, discussion forums are an ideal place for studying consumer value creation.

In their study relating to value creation in an online environment, Füller & Matzler (2008) defined product and service attributes comprising basic, performance and excitement factors, and posited that each affects consumer value differently. However, participants for the study were chosen via advertisements and participated through a questionnaire in the form of a competition. Thus, there are no studies concentrating on the existence of consumer value attributes in discussion forums; moreover, none with unselected participants. The approach is further supported by a previous study, in which the results show that consumers can easily add details to products (Füller et al 2004), thus promoting incremental innovations. However, their findings are closely related to emotions.

Emotions prevailing in online surroundings have been studied to some extent by academic researchers. Consumer satisfaction (see Füller et al. 2009 for Internet-based co-creation), consumer motivation and ways to influence it (Bartl 2006) and process satisfaction (Franke & Piller 2004) are examples of the extant studies. Studies presenting the impact of cultural differences (Jawecki et al. 2011) and interaction tools (Füller et al. 2009) complement the picture. According to Pitta et al. (2006, 428) company maintained forums should be restricted to satisfied consumers only (Pitta et al. 2006, 428), as positive emotions towards the process can lead to a desire also to engage actively in future co-creation (Füller et al. 2009). In addition, the results of previous studies show that addressing critical situations and managing conflicts in discussion forums requires an open dialogue with co-moderation and co-negotiation skills (Gebauer et al. 2012) and also understanding on cultural aspects that affect motivation and creativity (Jawecki et al. 2011).

The findings of the previous studies show that, due to anonymity and the potential to contact many people simultaneously, it is important to understand the collective effects within online discussions (Chmiel et al. 2011) and also to define how, when and why consumers experience positive emotions (Kwortnik & Ross 2007). There is also a need to study incidents of frustration,

negative verbal descriptions and frustration behaviour to enable their prevention and facilitate recovery from them. Furthermore, the social media environment and consumer postings in different social media applications should be addressed (Tuzovic 2010, 455). This study concentrates on discussion forums and consumer postings only in discussion forums.

Previous studies show the need to add emotion to innovation creation and success (Wood & Moreau 2006, 54) as they are closely related to consumer experience (Phillips & Baumgartner 2002). The importance of being treated equally in online innovation and also the easiness with which frustration and angry reactions can be evoked, has been noted (Gebauer et al. 2012). Furthermore, online environment studies show that it is possible to express strong emotions anonymously (Coffey & Woolworth 2004; Papacharissi 2004) and that emotions are voiced intensively (Éthier et al. 2006). Chmiel et al. (2011) even found that emotional expressiveness is the fuel sustaining some forums.

1.5 The purpose and positioning of the study

Understanding on consumer needs is regarded as essential in product innovation and, thus, consumer integration in the process is essential. Social media is a relatively new environment with a vast variety of new possibilities for companies. To date, social media applications have been found to be usable for advertising and promotional purposes.

Social media has interested companies for some time. Product innovation in social media has been studied to some extent over recent years, although the main interest has lain in advertising and promotion. The aim of this study is to analyse the potential of discussion forums for incremental idea generation. A generally stated wish for many companies is to utilise discussion forums on the Internet efficiently and for free, thus determining consumer preferences and ideas for new adjustments and minor improvements to existing products. In this study, both company maintained discussion forums and general discussion forums concentrating on any theme on the Internet will be studied to determine their potential. Also, with no participation in them, discussions will only be observed. Thus, it will be determined if it is indeed possible to find promising incremental ideas without any company participation, but only by observation.

It is to be assumed that some kind of company intervention is necessary to fully integrate consumers into the product innovation process. The challenge lies in the nature of social media, which is very strictly related to interaction between individuals and not with companies or even company representatives. Intervention as such is accepted, although it depends on who interacts. From

this perspective, the role of the so-called social media evangelist will be studied and defined. As stated in subsection 1.3, social media evangelists are part of a company's social media marketing, in which their role is to spread positive word-of-mouth on the company. In this study, the potential role of a social media evangelist in product innovation will be studied. Considering its opportunities and risks, social media definitely needs to be studied carefully to determine whether discussion forums have the potential for consumer integration, value creation with consumers and idea generation, or if it is an unrealistic dream.

As shown in figure 3, these functions are crucial when acquiring a deeper understanding on employing discussion forums for incremental product ideas. Figure 3 shows both the theoretical background of the study and some of the main sources on which this study is based.

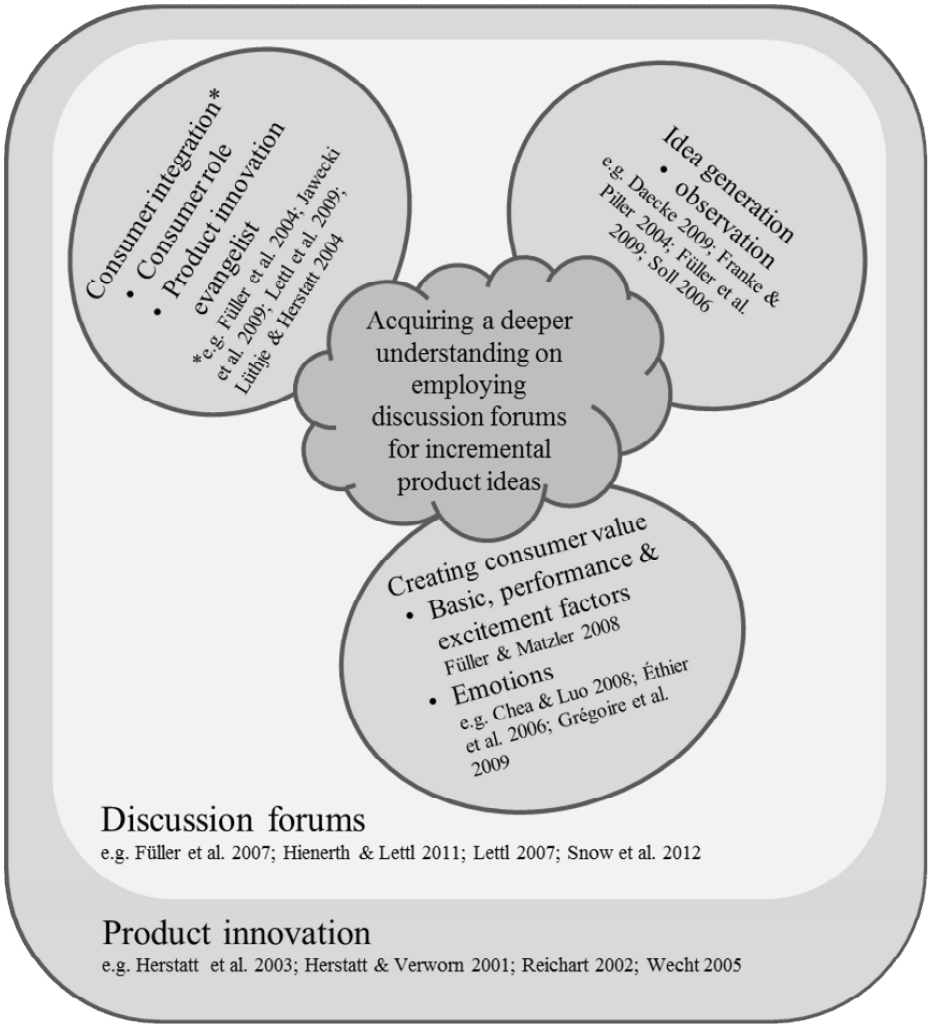

Figure 3 Positioning of the study

It is to be assumed that consumer integration is needed to determine promising and, to some extent, previously defined and analysed incremental product ideas in the long term, rather than only occasionally. Incremental product ideas are studied here solely through observation. Thus, this study will complement previous studies related to product innovation in discussion forums (e.g. Füller et al. 2009; Gebauer et al. 2012).

Incremental product innovation ideas are assumed to create consumer value. Basic, performance and excitement factors prevalent in the discussions will be observed in this study. As emotions influence the discussion process in addition to the outcome, they are also studied in this context.

The purpose of this study is to analyse how discussion forums can be employed for incremental idea generation. To achieve this, it is first necessary to address consumer integration strategy and, especially, to consider the idea generation phase in the product innovation process, new possibilities offered to product innovation by social media and the creation of consumer value in conjunction with consumers. Consequently, the purpose of this study can be further divided into the following sub-objectives:

1. To what extent do discussion forums contain potential ideas for incremental product innovation?
2. What would be the potential of discussion forums in creating consumer value?
3. How should consumers be integrated into idea generation for the company to determine unmet consumer needs?
4. How do consumer emotions towards an innovation evolve along the online discussion?

Considering the nature of social media, the consumer in this study is regarded as an active actor who is a desired partner in the innovation process. The process itself is ongoing and aimed at improving existing products to create consumer value. The primary empirical material for this study comprises discussions gathered from 28 different discussion forums relating to heart rate monitors, with the 20 longest discussions being selected for deeper analysis.

To be able to answer best the research questions, four articles have been written: “Social media discussion forums and product innovation – the way forward?”, “Observing discussion forums and product innovation – a way to create consumer value: Case heart rate monitors”, “Consumer needs and a systematic plan – the reality of social media discussion forums” and “Man, this frustrates me: Evolution of consumer emotions in online discussions”.

The presented positioning of the study will be further discussed in the following chapter. First, attention is paid to idea generation, idea selection and the role of the consumer, and later to building consumer integration strategy and also value creation in conjunction with consumers.

2 CONSUMER INTEGRATION IN IDEA GENERATION

2.1 Characteristics of idea generation and idea selection

Successful innovation is based on understanding consumer needs and then developing products that meet those needs (Hauser et al. 2006, 688). In identifying product opportunities, factors in three major areas should be considered. First, social factors, such as social and cultural trends and drivers and the recognition of historical trends, are important. Second, technology, especially emerging new technology, needs to be assessed and existing technology re-evaluated. Third, the economy, its state, level of disposable income and potential shifts in focus on where to spend money has to be studied (Cagan & Vogel 2002, 9).

New products should provide significant value to consumers (Zirger & Maidique 1990, 880) and, therefore, it is often recommended that consumers be included in the product innovation process to ensure that they get what they want (Mantel & Meredith 1986, 29; Grass 2009, 1). Companies have begun to understand the importance of users as a source of learning, innovation and product improvement (Rohracher 2005, 29) and realise that direct communication with consumers enables products to be tailored to their requirements (Dahan & Hauser 2001, 1). Social media has changed society and business environments as it enables anyone to publish and participate, and has brought a definite change to the speed of gathering information for product innovation purposes.

The value of successful idea generation has long been recognised (Hauser et al. 2006, 702). In addition to different tools and creativity and also problem solving techniques, impromptu decisions made at the spur of the moment are also typical (Koen et al. 2001, 50). Companies need to find a method that is the best alternative for them and consumers; therefore, different experiments are typical (Hayenga 1997, 6).

Amabile (1996, 94) emphasises three separate aspects in idea generation: expertise, creative-thinking skills and motivation, of which motivation is the easiest to influence. Consumers show expertise in discussions on product usage and freely reveal their opinions concerning what functions well and what should be improved. Those who have not yet used the product themselves ask

relevant questions on its functioning and ask for buying decision advice, thus fuelling the discussion.

The process for gathering ideas can be as simple as defining sources of ideas, deciding on methods of idea generation and screening for new product ideas (Urban & Hauser 1993b, 118). A critical element for success at this stage is the ability to communicate ideas (Turunen 2005, 195). Participants should share their excitement regarding the goal and display a willingness to help others to generate ideas and maintain their motivation (Amabile 1998, 83). Riedel & Schraps (2010, 100) argue that to succeed in the process, the preliminary problem needs to be clearly defined, different solution alternatives sought and chosen solutions properly defined. Ideas with potential for incremental innovations can also include internal improvements, product or service maintenance or new forms of a previous product (Boeddrich 2010, 146).

It is necessary to generate as many ideas initially as possible (Hayenga 1997, 6; Wahren 2004, 99) or to create very different ideas (Urban & Hauser 1993a, 126). It is not difficult to find consumer ideas on the Internet. Many consumers are eager to disclose their wishes and expectations, to comment on new products or product ideas (Kettunen et al. 2007, 124) and freely reveal information, thus relinquishing existing and potential property rights, to which all interested parties are given access; thereby, the information becomes a public good (von Hippel 2007, 302).

Idea generation alone is not sufficient. The correct ideas need to be selected and pursued to achieve the greatest business value (Koen et al. 2001, 51). Selected ideas should match product opportunity gaps (Cagan & Vogel 2002, 114–115) and both creativity and economic viability need to be considered (Prandelli et a. 2008, 33). As such, an initial scenario of a product opportunity or of a potential consumer segment can be created (Cagan & Vogel 2002, 114–115) increasingly with web-based tools; for example, virtual concept testing[6] (Prandelli et al 2008, 33), information pumps[7] (Prelec 2001, 3), and toolkits for user innovation[8] (Prandelli et al. 2008, 35). These web-based tools have become more common in the innovation process, although they mainly concentrate on later stages of the innovation process. However, companies need to remember that, no matter how active the consumers, the core activities of the innovation process remain managed and controlled by the companies themselves (Prandelli et al. 2008, 44). Furthermore, the companies are not

[6] Companies can develop different product concepts and let consumers compare individual product features in detail online (Prandelli et al. 2008, 33).

[7] A web-based information game in which participants give their evaluations and impressions in the form of a picture, object or new idea (Prelec 2001, 4).

[8] User-friendly tools for the configuration of new products that enable consumers to self-innovate products (Prandelli et al. 2008, 35).

interested in all consumers, but in the most eager innovators. Discussion forums typically attract many kinds of consumer; for example, those interested in a product who see the forum as a means to further influence their hobby or those who only seek information occasionally to assist with a problem. It is crucial to consider contributions from the correct consumers. The next subsection will further enlighten the theme.

2.2 Consumers' role in idea generation

Consumers with the most experiential knowledge on a product or its feature are usually also the most motivated to improve it (Sawhney & Prandelli 2001, 263). Knowledge comprises both implicit (i.e. tacit knowledge) and explicit knowledge, of which the former is unknown and difficult to verbalise or explain to others (Nonaka et al. 1994, 338)[9]; although it can be shared, it is not as easily communicated as explicit knowledge, which is easily articulated and explained (Reichwald et al. 2007, 26). Thus, as it is needed for consumer integration, tacit knowledge poses a challenge for companies (Nonaka et al. 1994, 338).

Lüthje et al. (2006, 6) contribute to the discussion by arguing that consumers with explicit knowledge on a product's usage should be able to generate useful product ideas as they have employed the product in practice (Lüthje et al. 2006, 6). However, it should be remembered that while consumers are a potential source for innovation (von Hippel 1988, 72) who should not be regarded only as passive persons, their influence on technology should not be exaggerated either (Rohracher 2005, 11). As the number of consumers participating in product innovation will probably be limited, the search for and recruitment of the best innovators becomes essential (Johne 1994, 52; Rohracher 2003, 189). In addition to knowledge, motivation is crucial at this point as unsatisfied participants can even systematically and purposefully try to disseminate their discontent to other participants and give a negative impression on a product (Gebauer et al. 2012, 9).

Companies do not simply seek any consumers, but those with the greatest innovation potential. Typically, these consumers will provide ideas to company professionals. Some researchers even state that new innovations will more likely come from the correct consumers than from professionals (Jeppesen & Frederiksen 2006, 10; Shah 2000, 3). The most desired consumers have many labels: innovators, market leaders (Johne 1994, 52), hobbyists

[9] Original source Polanyi, M. (1966) *The Tacit Dimension*. London: Routledge & Kegan Paul.

(Jeppesen & Frederiksen 2006, 10; Lettl et al. 2009, 244; Shah 2000, 3)[10], experienced consumers (Hoffmann & Konrad 2007, 13), early users (Kausch et al. 2005, 7; Rohracher 2003, 189), reference consumers (Kausch et al. 2005, 7) or so-called lead users (von Hippel 1988, 76). They will be the most relevant participant groups as they will be motivated to discuss and exchange ideas and information (von Hippel 1988, 76). These consumers have both product user experience and high explicit knowledge on the focal product (Lüthje & Herstatt 2004, 554). [11]Lüthje & Herstatt (2004, 554) developed von Hippel's lead user concept further and labelled them experienced users and described them as having awareness on new needs, dissatisfaction with present needs, application and object knowledge and also internal and external motivation.

The innovation potential and motivation of lead users is essentially higher than normal users (Herstatt et al. 2003, 58; Jeppesen & Frederiksen 2006, 12; Lettl 2007, 68; von Hippel 1986, 102–106; von Hippel 1988, 107) and they usually expect economic or personal benefits from innovation activities (von Hippel 2007, 302). As lead users often try to find solutions to their problems, they are found to create commercially attractive user innovations and have been shown to be a highly promising source of innovation for new product development tasks (Ernst et al. 2004, 123; Schreier & Prügl 2008, 331; von Hippel 2001, 701).

Lead users are members of a user population who are actively searching for solutions to their needs, are thus eager to innovate and are currently experiencing needs that will later be experienced by many users in the respective marketplace (Lüthje & Herstatt 2004, 556; Urban & von Hippel 1988, 570; von Hippel 1986; von Hippel 2001, 791). The lead user method is based on direct contact between developers and consumers (Hoffmann & Konrad 2007, 13), concentrates on finding, evaluating and developing innovation ideas and first concepts for new products (Fichter 2005, 51; Hoffmann & Konrad 2007, 14) and also for spotting errors and mistakes in prototypes during testing (Jeppesen 2005, 349). First, new market trends or product opportunities will be identified and then the correct lead users will work in close collaboration with producers to collect information on consumers' needs and develop solution suggestions and product concepts (Wecht 2006, 18–19). Lead users share

[10] Hobbyists can also refer to company representatives who are involved in hobbyist communities because of a sports interest (Kotro 2007, 154; Kotro 2006, 159).

[11] Motivation, product user experience, eagerness to interact and high explicit knowledge are all relevant in this study, when researching the discussion forums in question. As they relate to all definitions of the most desired consumer mentioned above, they will be considered synonyms. The lead user term is employed in this study as it best describes the focal phenomenon.

their ideas and concepts as they are very interested in the product and are the first to employ new products in social networks (Kratzer & Lettl 2009, 655).

In lead user theory, consumer dissatisfaction is regarded as essential as it means that the product is very important to the consumers (Lüthje 2000, 5; 149). Dissatisfaction stems from consumers becoming aware of their needs and leads to companies clearly understanding consumers´ needs that are not being met, which begins the problem solving process (Lüthje et al. 2006, 5; Lüthje 2000, 31–32). High benefit expectations are often connected to the experience of new needs that are not addressed by existing market offers (Lüthje 2000, 5).

In table 4, different consumer roles in the product innovation process are presented. Consumers are perceived either in a passive role (i.e. a resource) or in an active role. In addition to concrete active actions such as buying and using a product or service, consumers can be regarded as initiators (i.e. defining the need or problem), advisors (i.e. defining the demand, solving the problem, testing the concept), partners (i.e. developing the product, testing the prototype) or as marketers when they are pilot or reference consumers or opinion leaders (Herstatt 1991, 47). Kristensson et al. (2004, 5) emphasise that consumers should be regarded as co-producers and, thus, as a valuable source for initiating exploitable ideas, whereas Fichter (2005, 321) perceives consumers as formulators of demand, suppliers of ideas, evaluators, co-developers, testers and marketers.

Table 4 Consumers' role in the product innovation process

Consumer role	Active / passive	Researcher
Resource / source	Passive	Brockhoff (1985) Nambisan (2002, 394–395) Szmigin (2003, 80–81) Wecht (2006, 142)
User / buyer	Passive	Nambisan (2002, 394–395) Wecht (2006, 142)
Initiator / giver of ideas	Rather active	Fichter (2005, 321) Herstatt (1991, 47)
Advisor / evaluator / tester	Rather active	Ernst (2004, 196) Fichter (2005, 321) Herstatt (1991, 47) Seybold (2006, 23–26)
Formulator of demand	Rather active	Fichter (2005, 321)
Marketer	Active	Fichter (2005, 321) Herstatt (1991, 47)
Co-creator / co-developer / co-producer	Very active	Ernst (2004, 196) Fichter (2005, 321) Kristensson et al. (2004, 5) Nambisan (2002, 394–395) Seybold (2006, 23–26) Szmigin (2003, 80–81) Wecht (2006, 142)
Lead users / experienced users	Very active	Lüthje & Herstatt (2004, 554) von Hippel (1986; 1988)
Partner	Very active	Herstatt (1991, 47) Seybold (2006, 23–26) Tinz (2007, 82)
Independent developer	Very active	Brockhoff (1985) Tinz (2007, 82)
Hobbyist	Very active	Kotro (2007, 162)

Prahalad & Ramaswamy (2004b, 2) describe the change in the consumer role as a shift from isolated to connected, from unaware to informed and from passive to active. Furthermore, Kotro (2007, 162) describes active consumers as hobbyists who, although working within an organisation, also actively participate in innovative communities through their own long-term hobby. Thus, hobbyists not only bring individual insights but also the values and ideals of innovative hobbyist communities to their work (Kotro 2005, 13).

Due to the new social media environment and its characteristics, various definitions on consumer roles are employed in relation to discussion forums. As shown in table 5, the roles of participants are typically defined in relation to their social commitment and also to the theme. From the company perspec-

tive, the most desired participants are those with regular visits and postings, showing expertise in relation to the discussed theme.

Table 5 Consumers' role in discussion forums

Characteristics	Status	Identity	Researcher
Weak or non-existent commitment, possible future potential.	Tourist	Contact with the community is socially weak.	Kozinets (1999, 254–255; 2002, 64)
	Contact searcher	Contact with the theme is weak.	Kozinets (1999, 254–255; 2002, 64)
	Visitor	No identity in the community.	Kim (2000, 220)
	Novice	New community members at introductory stage.	Kim (2000, 220)
Social interaction important, whereas the theme is only secondary.	Regular	Established members who are already socially integrated.	Kim (2000, 220)
	Conversationalist	Interested in social interaction.	De Valck (2005, 121)
	Hobbyist	Interested in interaction.	De Valck (2005, 121)
Theme important, whereas social interaction is irrelevant.	Devotee	Interested in the theme.	Kozinets (1999, 254–255; 2002, 64)
	Opportunist	Interested in the theme.	De Valck (2005, 121)
	Informationalist	Interested in the theme.	De Valck (2005, 121)
	Functionalist	Interested in the theme.	De Valck (2005, 121)
The most active and enthusiastic participants, both socially integrated and interested in the topic.	Insiders	Interested in the theme and socially committed to the community.	Kozinets (1999, 254–255; 2002, 64)
	Leaders	Volunteers and staff who maintain the community.	Kim (2000, 220)
	Elders	Long-term regulars who share their knowledge and expertise.	Kim (2000, 220)
	Core members	Interested in the theme, socially committed.	De Valck (2005, 121)

Kozinets (1999, 254–255; 2002, 64), labels short-term participants as tourists whose contact with the community is socially only weak or even non-existent. Also, a contact searcher has only a weak link to the theme of the community and does not look for social or long-term contacts. The most important participants are either devotees who are interested in the theme or insiders who, in addition to the theme, are also socially integrated into the community (Bartl et al. 2004, 149; Kozinets 1999, 254–255; Kozinets 2002, 64).

Kim (2000, 220): defines participants of virtual communities based on stages of community involvement. Visitors are persons without persistent identity in the community, novices are new members who need to learn the protocol and be introduced into community life, regulars are established members who comfortably participate in community life, leaders are volunteers, contractors and staff who maintain their community and elders are long-term regulars and leaders who share their knowledge and disseminate the culture.

De Valck (2005, 131) divides participants into the following groups: core members are found in the overlap between three areas, combining a factual, interactional and recreational orientation. Opportunists, functionalists and informationalists share a preference for factual information in the form of recipes, reviews and articles. Conversationalists stand out for their participation in the community's forums and chat rooms, thus their orientation can be termed interactional. Hobbyists are characterised by their recreational orientation aimed at involvement with technical functionalities (de Valck 2005, 167). Opportunists, functionalists and informationalists are oriented towards tasks, conversationalists are oriented towards interaction, hobbyists are oriented towards recreation and core members combine the three orientations (de Valck 2005, 172). Those who seldom share ideas but rather comment stand out as they are the members with the most ties and act as nodes in a community network. Conversely, innovators who only share ideas are rather unattached and only have limited links to other participants (Jawecki et al. 2011, 154.).

To enable description of the best possible innovators in discussion forums, the information presented in tables 4 and 5 needs to be combined for further analysis. In figure 4, the definitions presented are analysed in accordance with two dimensions: the consumer role both in the product innovation process and in discussion forums.

		Consumer role in discussion forums	
		Passive	Active
Consumer role in the innovation process	Active	Devotees, Opportunists, Informationalists, Functionalists, Independent developers.	Co-creators / co-developers / co-producers, Lead users / experienced users, Partners, Insiders, Leaders, Elders, Core members.
	Passive	Initiators / givers of ideas, Advisors / evaluators, Formulators of demand, Tourists, Contact searchers, Visitors, Novices, Resource / source, Users / buyers.	Regulars, Conversationalists, Hobbyists, Marketers.

Figure 4 Consumer role in idea creation in discussion forums

The passive group in both dimensions can be considered to be the least desired. Customers perceived as a resource/source offer very little potential for companies. Similarly, contact searchers, visitors, tourists and novices might have some future potential, although they show very weak or even non-existent commitment or interest in the product at present. A product user or buyer is already showing some interest, although there is still no special interest or commitment to product innovation.

Between passive and active, although closer to the passive aspect, are those consumers who, from the company, request advice or ask to test the focal product. Those who formulate demand or market the product are in the same category; at least at the moment, they do not forecast future potential or suggest product improvement ideas.

Regulars, conversationalists, hobbyists and marketers are active in discussion forums. However, their role in the product innovation process is rather passive as they are interested mainly in the social aspects and their commitment to the theme discussed may be rather weak. Conversely, devotees, opportunists, informationalists and functionalists can be active in the product innovation process as the theme is of importance to them. Nevertheless, as social interaction is not relevant to them, they would not be the most desired participants in discussion forums. Social media is based on interaction, it is not only information that matters but also the social aspects. Although independ-

ent developers show high potential in the innovation process, their role in discussion forums is weak, if not non-existent, as they do not find the social aspects appealing.

The best innovators have an active role measured by both dimensions. Such consumers are termed insiders, leaders, elders and core members who all show commitment to the theme and the theme's discussion. These participants can be easily distinguished when reading the discussions; in addition to the concretely labelled category, for example, core members, elders and leaders are definitions that participants might add to their profiles in a particular forum, the frequency of postings and their content show dedication to the topic. These participants, in addition to co-creators, co-developers, co-producers, lead users, experienced users and partners, play an active role and show interest and initiative. All of these terms emphasise the interaction between consumers and company representatives.

Interaction, interest in the theme and social commitment are crucial when considering the consumers' role in idea generation. To be efficient in the long term, companies need to gain trust in the forums and plan the process in detail. In this, building the consumer integration strategy is essential and will be discussed further in the following subsection.

2.3 Building the consumer integration strategy

2.3.1 Preparing for consumer integration

Successful consumer integration depends on sourcing innovative consumers (Bartl 2006, 25); especially, passionate and knowledgeable consumers with clear vision of and understanding on reality are needed (Seybold 2006, 23). In successful consumer selection, special attention is paid to the ability and competence of consumers and the amount of time that they will be able to invest, their motivation and also the trust and competitive relationships between consumers and the manufacturer (Fichter 2005, 31).

At its best, consumer integration into the innovation process can lead to a more successful product portfolio (Gassmann & Wecht 2005, 1), improve market orientation, reduce costs, give access to new knowledge (Grass 2009, 4) and help to gain new consumers who automatically turn to manufacturers to report problems or put forward ideas for new product or service innovation (Herstatt & Sander 2004b, 101). However, company participation is necessary as consumers cannot alone solve challenges for the company. Outstanding results cannot be expected without addressing the consumer integration process.

However, benefits in consumer integration to the product innovation process are often overestimated (Carbonell et al. 2009, 547) and, even when consumers know precisely what they want, they often cannot transfer that information to manufacturers clearly or completely (Thomke & von Hippel 2002, 74) or they might not know their needs as they are used to the product and do not consider possible problems in usage or applications (Lüthje 2003, 42; Verona et al. 2006, 778). While consumers might be willing to share their thoughts, they might not be aware of the types of information the company needs to create valuable products (Ulwick 2005, 18). Therefore, a successful process is based on interaction, a genuine discussion between company professionals and consumers. Based on the literature review, it can thus be concluded that interaction is needed to solve the multifaceted challenge; while consumers either do not know or cannot say what they expect from a product, the information given by the consumers does not necessarily reach the correct company representatives. In addition, the company might not want to utilise the information or know what to do with it.

It is crucial for companies to understand consumers' expectations on the innovation process as they will only be willing to share their ideas, product preferences and modify existing products if these expectations are met; in other words, if they find the process rewarding (Füller 2010, 99) and enjoy their participation (Füller et al. 2009, 96). From the company perspective, consumers must want to participate in the innovation process. Therefore companies need to be able to create an innovation process that, among consumers, is considered fun and rewarding in itself and that also gives the consumers the opportunity to show their expertise and improve their knowledge and skills (Jawecki et al. 2011, 154). The main reasons for consumer participation are curiosity, dissatisfaction with existing products, interest in innovation, gaining of knowledge and the opportunity to discuss ideas or get financial rewards (Füller 2010, 108–109). Consumers also need motivating and encouraging as unsuccessful interaction can spoil even a very promising process (Reichart 2002, 127).

Companies that integrate consumers efficiently value their idea contributions with regard to originality and productivity, meaning that they would otherwise not have originated those ideas themselves (Skiba & Herstatt 2008, 23). Companies need to extend their ability to employ consumer knowledge that lies beyond their reach and influence (Verona et al. 2006, 778); therefore, also online opportunities for consumer integration are increasingly valued. As social media is interaction between individuals and, as such, company interventions are not accepted, companies should pay attention to what consumers expect and tolerate and what they dislike. A form of company intervention that is acceptable is a response to a consumer request for information (Pitta &

Fowler 2005, 271). At times, this certainly is even demanded. Company representatives can subtly encourage others to participate, ask the others for their personal opinions and success stories, and also ask for their opinion on a particular product. However, it is better if these interventions come from a private individual than from an official company representative (Mustonen 2009, 25).

The design of virtual integration has to be tailored to its participants and to the development tasks at hand (Füller et al. 2006, 67). Piller et al. (2006, 9) suggest virtual consumer integration to be structured in the form of a problem-solving process, in a way that clearly shows the connection to consumer satisfaction and need-related problems. Offering a starting point that already matches the profile of the user makes it easier for the consumer to feel involved and personalises the whole co-design process. (Piller et al. 2006, 9; Reichwald & Piller 2006, 7.) Initially, an innovation platform is created and then left for the community to further develop (Reichwald & Piller 2006, 8).

New members are given information on tasks and cultural norms and, at first, are merely encouraged to observe common practices and communication to foster re-thinking and re-experiencing processes before they are allowed to participate (Hemetsberger & Reinhardt 2004, 5). Other community members offer assistance directly and also refer the innovators to individuals they know outside of the community (Franke & Shah 2001, 12). The community provides the users with information, assistance and other resources (Franke & Shah 2001, 21) and, thus, in practice, provides relevant information through technological tools, task-related features, collective reflection, stories and usage scenarios (Hemetsberger & Reinhardt 2004, 6).

Table 6 summarises decisions relating to consumer integration that a company should consider when planning a virtual product innovation process with consumers. At its best, the process begins by defining the company's need and identifying why consumers are to be integrated into the process. The most eager innovators need also to be sourced; those who are most suitable showing not only activeness but also eagerness to innovate, creativity, product knowledge and motivation.

Table 6 Decisions related to consumer integration in virtual product innovation

Deciding the need and goals	Getting new ideas, Testing ideas, Getting feedback from existing products.
Choice of target group	Active consumers, e.g. lead users.
Choice of characteristics for the chosen consumers	Eagerness to innovate, Creativity, Knowledge / expertise, Motivation.
Intensity of interaction	At particular times only (e.g. idea competitions), Constant.
Stage of the innovation process when the consumers are to be involved	Early stages / later stages / the whole process.
Method of participation	Observing the consumers, Interaction, Discussions.

When creating a consumer integration strategy, the company needs to decide on the stage of the process at which consumers will be contacted (Gassmann et al. 2005, 2; Reichart 2002, 127), how often they will be contacted and for what reasons, what is the best method and form for their integration and who are the correct consumers with the appropriate preconditions and abilities (Reichart 2002, 122). Integration can occur at specific times only or might be a constant process and also be related to the whole product innovation process or some of its parts. There are many alternatives for consumer integration, varying from active co-creation to passive observation. These alternatives will be further discussed in the following subsections.

2.3.2 Non-participatory consumer integration

A key to success in product innovation is the ability to listen to the voice of consumers, their needs and preferences (Urban and Hauser 1993a, 126) and to discover their opinions in relation to technical problems (Reichwald et al., 2007, 8). As such, discussion forums offer an ideal source for product innovation research. It should, however, be remembered that the quality of the discussion is crucial; if the quality of the information declines, participants usually go elsewhere (Pitta & Fowler 2005, 271).

The netnography approach is an example of passive consumer integration that enables passive information retrieval and community monitoring, sometimes even without the consumers knowledge (Kozinets 2001; Bartl 2006, 63). Netnography can be employed as a purely observational method or as one that includes a high degree of participation (Kozinets 2006, 281; Bowler 2010, 1271). The process of a netnographic research usually involves the following steps: preparing the background (e.g. preparing the questions, choosing the online forums and participants), gathering and analysing data, interpreting the data, conducting ethical research and offering opportunities for feedback (Kozinets 2001, 5). As an example, Campbell's employed netnography to find a new ingredient for their soup (Kozinets 2010).

In netnographic research, both the data that the researcher directly copies from online discussions and the data that the researcher records in relation to his observations on the community, its members, discussions and meanings are important. As online discussions usually contain many social elements, the texts can be classified as primarily social or primarily informational and also as primarily on-topic or primarily off-topic in relation to the research question (Kozinets 2001, 8).

In addition to netnographic research, consumer information for new product innovation ideas can be gathered rather passively from various sources, such as consumer complaints and feedback (Zboralski & Gemünden 2004, 290), consumer inquiries (Fichter 2005, 31) and data from search portals or product catalogues (Dahan & Hauser 2002, 336). In addition, companies can collect feedback from consumers (Dwyer 2007, 76) and monitor what users do with their products, how the products are altered and what appear to be the most pressing issues among users (Jeppesen & Frederiksen 2006, 6). In addition, Tinz (2007, 82) mentions analysing patents, evaluation of the extant research literature and following consumer and user panels as means for finding new product or service ideas.

Companies try to get close to their consumers to listen to them and learn more concerning specific consumer needs and, thus, be able to better satisfy them (Dahan & Hauser 2001, 1; Gassmann & Wecht 2005, 1; Urban & Hauser 2004, 74). Dahan & Hauser (2001, 10) describe this so-called "listening to consumers approach" in five steps. Today, the Internet is increasingly employed during these steps as consumer ideas and information are gathered, needs characterised and prioritised, concepts created and, finally, designs tested on consumers.

The listening to consumers approach can be employed over the whole innovation process, although Ulwick (2002, 91) points out that companies should not be overly passive by only observing the kind of wishes voiced by consumers, but rather ask directly for concrete improvement suggestions. Similarly,

Mazur (1997, 3) emphasises that consumers' requirements can be so basic that the consumers might fail to mention them until the company fails to perform them. Without these expectations, the product or service might cease to be of value as their absence is very dissatisfying, although meeting expectations often goes unnoticed by most consumers.

If a company builds a process by listening via social media, it can very efficiently learn about its products and services directly from its customers (Evans 2008, 34). However, the contents of social media discussions vary from very professional to sometimes even abusive content, which means that the person "listening to" the discussion cannot be just anyone, but has to have an understanding on the content of the discussion (Agichtein et al. 2008, 1). Scott (2007, 47) argues that critical comments and negative feedback can also be beneficial to the company as they attract people to at least read the discussions and possibly even state their opinions. This argument is further supported by the fact that online discussions differ from real-life discussions with their social aspects; consumers care about the number of people who are talking with them (Sohn et al. 2002, 2).

In addition to the varying usability of the content in social media discussions, company representatives reading online discussions have, at least initially, very little background information on the participants. In addition to evaluating the opinions of total strangers, they have to draw their conclusions from a relatively impersonal text-based resource exchange (Brown et al. 2007, 7). Furthermore, they will need to decide from this very small amount of information whether a participant putting forward a product improvement suggestion belongs to the desired target group. It is, therefore, only natural that, to obtain more information, passive listening to consumers is often followed by more active interaction as consumers are integrated into the product innovation process. A challenge for a company is to create research tools with techniques aimed at discovering unarticulated needs through direct consumer observation and interaction (Prandelli et al. 2008, 16).

The anonymity in social media enables consumers to reveal their emotions[12] freely, with their emotions often being expressed at a rather high level of intensity (Éthier et al. 2006, 636). In addition to anonymity, the lack of face-to-face interaction means that some consumers forget politeness and are rather openly critical (Papacharissi 2004, 277). Angry consumers who are disappointed with a company's or product's performance can be bitter and might even try to destroy the company's reputation (Rad 2011, 791). In

[12] Emotions in previous research related to social media are often divided into the four positive (i.e. affection, contentment, happiness and pride) and four negative (i.e. anger, fear, sadness and guilt) emotions (e.g. Brebner 2003; Eid & Diener 2001; Laros & Steenkamp 2005).

addition, feature fatigue has been listed high among issues that annoy consumers (Wood & Moreau 2006, 54). As the presence of even a few disappointed consumers utilising social media can seriously damage a company (Rad 2011, 791), it is indeed beneficial for companies to monitor discussion forums and other social media environments such as blogs and consumer rating sites (Tuzovic 2010, 454). As it is rather time-consuming for a company to monitor blogs and discussion forums, new businesses have emerged that offer such services.[13]

2.3.3 Participatory methods in consumer integration

Companies participate actively in online communities and provide ideas and advice on a wide variety of subjects and topics on which they are knowledgeable, thus gaining the trust of their customers who help in different problem situations (Scott 2007, 87). Online communities have proven to be innovative (Snow et al. 2012, 3) and, thus, can be an asset for a company. It has to be remembered, however, that it is short-sighted, at times even dangerous, to ask participants in a discussion for their creative insights but neglect their feedback when taking decisions (Gebauer et al. 2012, 9).

Active participation in social media is challenging for companies as it means communication at a rapid speed with Internet applications that respectively "never forget" what has been written. It also has to be remembered that this dialogue is interaction between equal problem solvers and is not company controlled (Prahalad & Ramaswamy 2004a, 4). In its purest sense, this provides an opportunity to create value in conjunction with consumers. Participating in discussions and maintaining them helps to connect with consumers at a deeper level and gain valuable insight on consumer preferences and satisfaction (Volmer & Precourt, 2008, 54).

Social media has brought many new ideas for consumer integration or made it easier and faster to use those that are older. Active consumer integration in social media includes toolkits[14] and co-creation in conjunction with consumers (Kozinets 2001; Balderjahn & Schnurrenberger 2005, 2) and also online focus groups[15] employing chatrooms and discussion forums (Daecke 2009, 35), idea

[13] Cyber Alert (2013) or Twingly blog (2010)

[14] User-friendly tools for the configuration of new products that enable consumers to self-innovate products (Prandelli et al. 2008, 35).

[15] Participants are asked for their opinions on new product concepts to identify objectively the best potential ideas (Prandelli et al. 2008, 24).

competitions[16] (Soll 2006, 56) and information pumps[17] (Prelec 2001, 3). The basic idea for idea competitions and information pumps is the same: to collect ideas from consumers. Usually, idea competitions are organised at the very beginning of the innovation process to build a basis for new products. The attraction of idea competitions lies in getting close to the ideas of other participants (Soll 2006, 76–77) and to get help in solving a problem. When consumers understand that other people in the same situation are solving the problem, it will be easier for them also to solve it (Amabile 1996, 180). Idea competitions have gained some popularity and specific organisations can be found that specialise in idea competitions to create new ideas.[18] Compared to idea competitions, participants in information pumps are asked to express their opinions on new product concepts to identify those that are potentially the most successful. The idea of an information pump is to have participants pose and answer each other's questions instead of simply stating opinions (Prelec 2001, 3).[19]

In addition to idea competitions and information pumps, crowdsourcing[20] to collect consumer ideas has been studied (e.g. Howe 2006; Howe 2008; Poetz & Schreier 2012). In crowdsourcing, companies host idea or content competitions online (Walter & Back 2011, 2); thus, being more actively present as in idea competitions or information pumps. Poetz & Schreier (2012, 247) found that the crowdsourcing process generated a lot of ideas, even surprising the researchers with their number, that were new and promising, although some lacked feasibility.

The abovementioned methods clearly require company participation, although the company can be regarded as, for instance, simply the provider of a platform or the initiator of a competition. An approach demanding more participation and dialogue from the companies is called community-based innovation[21], whereby the focus shifts from companies to consumer communities (Prandelli et al. 2008, 19) and, typically, the Internet's online communities are systematically utilised (Bartl 2006, 62). Community-based innovation comprises the following steps: defining the necessary participant profiles to solve

---

[16] An online competition is a special platform organised by a company to openly collect consumer ideas (Soll 2006, 56).

[17] An information pump is a web-based game in which participants present and evaluate ideas in the form of a picture, object or new idea. Participants get points according to their performance, by both posing and answering questions (Prelec 2001, 4).

[18] See, for instance, Idea Competition (2013)

[19] Information pumps have been mainly employed in test conditions, not by companies (Matthews & Chesters 2005).

[20] In this study, crowdsourcing is regarded as online idea or content competitions in which companies actively participate.

[21] Community-based innovation in online forums is considered to represent the practices of open innovation (Laursen & Salter 2006, 113; Dahlander et al. 2008, 116; Rindova & Petkova 2007, 218).

the innovations assignment; identification of online-communities, in which the needed profiles can be found; design of virtual interaction; and contacting and integrating the chosen online communities into the innovation process (Bartl et al. 2004, 148; Füller et al. 2004, 3; Füller et al. 2006, 63).

Community members are usually willing to share their ideas and expertise (Franz & Wolkinger 2003, 1; Jeppesen & Frederiksen 2006, 1). As soon as creative members find a solution, idea, concept or product design, it is presented to the community, either by verbal descriptions or virtual designs (Bartl et al. 2004, 146; Jawecki et al. 2009, 10; Wecht 2006, 219). The community can be perceived as a test lab for products (Jeppesen & Frederiksen 2006, 8) although, as interactivity is very important in online communities, the presence of the innovation partner and personal contacts are needed (Gerybadze 2003, 155; Franke et al. 2006, 304). However, it has to be remembered that not all participants are willing to share their opinions as they do not either feel trust or are worried about losing their anonymity (Leon et al. 2013, 10).

Firm-hosted user communities rely on the fact that users are willing to share their innovations with others (Jeppesen & Frederiksen 2006, 11). If members of a community believe that their knowledge is valuable and useful they are more willing to share it with others (Füller et al. 2008, 611; Wasko & Faraj 2000, xx). Only by clearly visualising a new product and its features will consumers be able to realistically assess whether they like it and whether the new product idea fulfils a still unknown need (Füller & Matzler 2007, 378).

Especially committed community participants show lead user characteristics and are especially interested in innovations (Fichter 2005, 69; Pitta & Fowler 2005, 284). Most often they are fanatical customers of a company and ready to act as its evangelists (Dwyer 2007, 76). Whereas online communities of consumers interact to solve problems (Pitta & Fowler 2005, 285), communities of co-designers exist to create new products (Piller et al 2006, 2) and emerge when there is a unique need and when it is cheaper to invent anew than to search for and acquire a needed innovation that might exist elsewhere (Morrison et al. 2000, 1514). Many participants in virtual communities participate only for a short time to solve actual specific problem (Herstatt & Sander 2004a, 4).

Individuals often assist innovators who they might or might not know and often assist even when not motivated by the possibility of directly using the innovation themselves or receiving anything in return (Franke & Shah 2001, 22). Once the innovator has transferred the ideas into designs, they are usually shared freely within the community. Typically, reactions to the designs promptly follow. Other members share their honest opinions, give fair evaluations of the new idea, make suggestions for improvements and state their ideas regarding the new idea (Jawecki et al. 2009, 121). One of the strongest moti-

vations for assisting is the enjoyment gained from working with others. The presence of community norms supporting the provision of assistance for free and the idea that helping others in the community is what should be done are reflective of social processes, not personal benefit (Franke & Shah 2001, 22). Feedback is generally appreciated as it motivates and challenges the innovator to create improved ideas (Jawecki et al. 2009, 121). Typically, innovations are freely shared within the community either by written description or self-made drawings (Jawecki et al. 2009, 119). It is, however, important to carefully consider the best methods of interaction between the company and participants and also for interactions among participants (Gebauer et al. 2012, 9).

While generalised exchange is not conditional, there is an expectation in that, if community members provide assistance today, someone else will provide them with assistance when they need it (Franke & Shah 2001, 23). In addition to competent feedback, a main element of most responses to newly posted designs is encouragement to continue innovating (Jawecki et al. 2009, 121). It can be difficult or impossible to value information that is being shared in the context of its potential usage; it is often not known whether a functioning prototype will be developed, if the product will be used by even one individual, if the product will be used by many and what the value of the product will be for those who use it (Franke & Shah 2001, 24). Designers who repeatedly showcase creative designs are rewarded for their efforts and contributions with a degree of prestige and status within the community (Jawecki et al. 2009, 121).

The anonymity of online interaction helps participants to reveal more concerning themselves than they otherwise might and facilitates many discussions (Mathwick 2002, 42). Communities respect expert opinions and content of high value to the community attracts attention with little reference to the originator (Dwyer 2007, 75–76). Interested consumers who are low on creativity skills might not put forward very creative solutions themselves, but they might be able to assess the appropriateness of someone else's solution, challenge it and contribute valuable modifications. Even consumers with no creativity whatsoever and no task-related skills, who could thus be considered unqualified, can be important if they inspire others to become more innovative, give support in coordination activities, ask challenging questions or just admire the more creative members (Jawecki et al. 2009, 118).

Virtual product innovation related to online communities enables consumers to actively engage in specific innovation tasks of development projects. An innovation community (Sawhney & Prandelli 2001, 263) permits active consumer integration on an ongoing basis. Successful virtual consumer integration requires a producer to clearly define which types and segments of consumers should be integrated into the task that the right online communities are identi-

fied, a virtual interaction design is developed and consumers are accessed and invited to participate (Füller & Matzler 2007, 382). Van Rompaey et al. (2005, 1) point out, however, that a company needs to have the ability to channel consumers' enthusiasm and creativity into a convenient result, taking into account business and marketing interests.

By establishing direct, persistent and interactive dialogue, a firm can access knowledge at low cost from individual consumers and also from discussion forums (Sawhney et al. 2005, 11). Companies can also build online forums that take consumers through the whole innovation process and will, thus, be able to approach consumers directly and individually (Bartl 2006, 38). In addition to these, forums devoted to particular products can also reveal useful information to the respective companies (Henkel & Sander 2003, 97; Piller et al 2006, 3). Companies can also show prototypes to community members so that the process becomes more realistic and understandable (Bartl 2006, 39).

Dialogue is important in online surroundings as consumers can very easily turn to a competitor, which does not demand any physical effort at all (Chea & Luo 2008, 29; Rad 2011, 794). Most consumers who are attracted to competitors state incorrect attitude and indifference from the focal company's representatives as the main reasons that cause negative emotions such as angriness and frustration (Guchait & Namasivayam 2012, 221–222; Rad 2011, 795). Furthermore, on the Internet, it is difficulty with reaching company personnel that annoys consumers the most when something goes wrong; therefore, presence in online forums is crucial (Chea & Luo 2008, 46–47). Time does not correct the problem in social media; first, negative comments are there for anyone to see for a long period of time and, second, after negative postings, customers tend to cut any communication with the company (Grégoire et al. 2009, 27). Although negative postings in social media can rapidly damage a company and discourage other consumers from buying its products, as silence is not necessarily the sign of satisfaction (Rad 2011, 794), constructive negative feedback should be encouraged and addressed quickly (Chea & Luo 2008, 46; Rad 2011, 800).

Not only negative but also positive emotions such as liking and joy are experienced on the Internet at a rather high level of intensity (Éthier et al. 2006, 636). Positive emotions can spread among participants and overcome negative beliefs, and are therefore worth encouraging (Kwortnik & Ross 2007, 333). In addition to satisfaction related to a product and its performance, emotions can be influenced by measuring and changing consumer expectations before use; for instance, on the Internet, by ensuring detailed usage instructions (Wood & Moreau 2006, 55).

Emotions play an important role in buying decisions and in forming an opinion on a product (Rucker & Petty 2004, 3) and negative emotions have a

stronger effect on other participants than those that are positive (Liljander & Strandvik 1997, 167). Impoliteness and incivility do not dominate discussions on the Internet in general (Papacharissi 2004, 276). However, the presence of even a few angry consumers can damage a company's reputation and the product image, thus requiring quick intervention from the company (Rad 2011, 791). Therefore, situations in which the consumer shows strong negative emotions are critical (Liljander & Strandvik 1997, 167). Active company participation and positive interaction between company representatives and consumers play key roles in incentivising consumers to co-create in an online environment (Prandelli et al. 2008, 13), enabling them to indicate both their known and unknown needs (Füller & Matzler 2007, 380). Thus, consumers participate in creating value in the form of improved products. Value creation with consumers is further discussed in the following subsection.

2.4 Creating value with consumers

Consumers participate in product innovation freely, of their own will, and they should be regarded as active actors, not as passive objects who patiently wait for new products (De Mooij et al. 2005, 108). Mainly, it is the opportunity to get an improved product that attracts consumers to innovation and to give away their information without any reimbursement (Hoffman 2007, 323; Tinz 2007, xii; Wecht 2006, 133). The higher their involvement and expertise in a product, the more consumers will be interested to take part in innovation (Hoffman 2007, 324). The whole joint innovation process increases perceived consumer value, thus making the consumer willing to pay for a new benefit (Priem 2007, 220).

However, virtual consumer integration only works when experienced consumers are willing to participate (Füller 2006, 639). Despite the high quality of their ideas, innovative members are not only willing to share their knowledge within their online communities, but also externally. Several examples indicate that user-innovators are willing to collaborate with companies for free (Jawecki et al. 2009, 121).

Consumers have become active participants and, at its best, a mutual learning process is born through interaction. Consumers and company representatives learn from the new roles: consumers about the activities and processes that were once solely the domain of the company, and company representatives about consumption and consumer perceptions (Wikström 1996, 360). Thus, if paid sufficient attention, interaction is regarded as the function that creates consumer value.

As presented in table 7, consumer value has been defined in the literature by many different attributes. Common to them are, however, the perception of value by the consumer and product user experience. The consumer has power and can voice preferences and opinions in interaction with companies.

Table 7 Definition of consumer value

Author	Definition
Zeithaml (1988, 14)	Consumer value is the consumer's general assessment of product use, based on the perception of what is given and received.
Anderson et al. (1993, 5)	Consumer value is the perceived financial worth by the consumer in relation to economic, technical, service and social benefits.
Gale (1994, xiv)	Consumer value is quality perceived by the market and adjusted for the relative price of a product.
Butz & Goodstein (1996, 63)	Consumer value is the emotional bond between the consumer and the producer that is established after the consumer has user experience of a product and has found the product to provide added value.
Woodruff (1997, 42)	Consumer value is the perceived preference for a product by the consumer, including product attributes, attribute performances and consequences that are related to the use of the product and to achieving the individual goals and purposes by the consumer.
Holbrook (1999, 6)	Consumer value is comparative, personal, situational and related to user experience, adding value to the consumer rather than to the focal product.
Cagan & Vogel (2002, 62)	Consumer value comprises emotion, aesthetics, identity, ergonomics, impact, core technology and quality, all of which contribute to the overall product experience and relate to the value characteristics of usefulness, usability and desirability.
Prahalad & Ramaswamy (2004a, 4)	The experience of participation and creating together is the core of consumer value experience.
Carlson & Wilmot (2006, 6)	Consumer value relates to physical features, quality and durability, service and convenience, experience and trust, emotional appeal and cost.
Füller & Matzler (2008, 116)	**Consumer value comprises basic, excitement and performance factors related to a product and the user experience.**
Consumer value in this study	Consumer value comprises basic, excitement and performance factors related to a product and the user experience.

In this paper, consumer value is understood in line with Füller & Matzler´s (2008, 116) definition as it has been successfully employed in studies relating to product innovation in online forums and to consumer satisfaction (Füller 2010; Füller & Matzler, 2008; Füller et al. 2009; 2006; Gebauer et al. 2012). According to this definition, basic factors are the minimum requirements that consumers expect in a product; the factors that cause dissatisfaction if not fulfilled, but which do not lead to customer satisfaction if fulfilled or even exceeded. Excitement factors are those that increase customer satisfaction and delight if delivered, although their non-existence does not cause dissatisfaction as they are not expected. Performance factors are crucial as they lead to satisfaction if performance is high and to dissatisfaction in the case of low performance (Füller & Matzler 2008, 116).

It is not, however, sufficient for innovators of new products to study only a product's basic, excitement and performance factors, successful new products and improvements to existing products also demand understanding on emerging possibilities (Cagan & Vogel 2002, 9). As presented in figure 5, restrictions and possibilities, both from the consumer and company perspectives, form the background for a successful product innovation process. From the consumer perspective, motivation, interest and the ability to think creatively together with product knowledge and experiences crucially influence the process. In addition, from the company perspective, financial resources, time restrictions and also competition need to be considered before the consumer integration process is even begun.

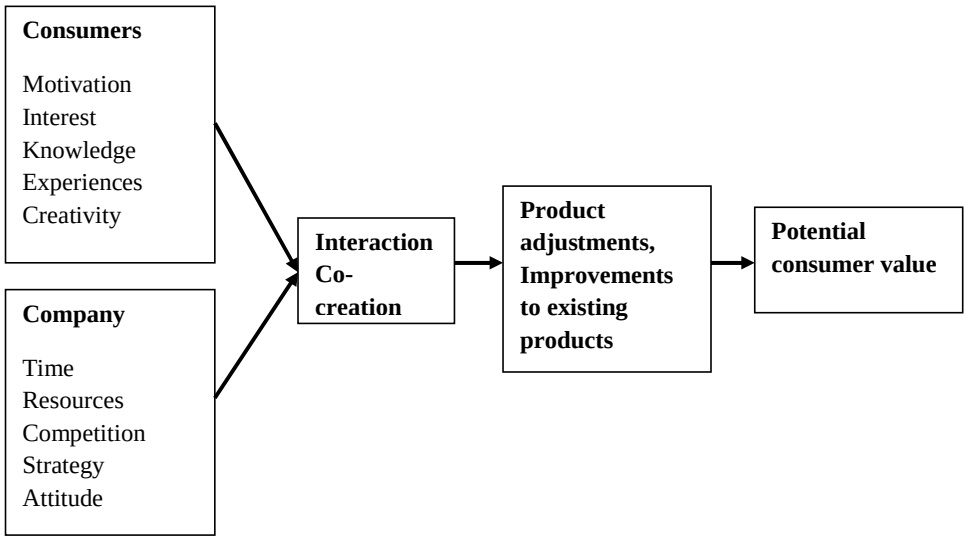

Figure 5 Creating consumer value

The goal of the consumer integration process is to create consumer value. At the beginning, a clear and defined consumer integration strategy is needed that, in this study, has been limited to the idea generation stage of the product innovation process. To find and further develop product innovation ideas, company participation in some form is definitely needed. Consumers are eager to disclose their experiences and voice concerns and wishes in relation to product attributes and functioning. Participants are active in asking and answering questions and correct interventions encourage their eagerness to participate. However, it must be remembered that, to avoid missing potential opportunities, the dialogue needs to be an active conversation between two equal partners and not only company directed.

The core of the value creation process has been changing from product experiences towards personalised consumer experiences. Informed, networked and active consumers actively interact with the firm and participate in value creation, thus making dialogue, access, transparency and understanding central to the whole value creation process (Prahalad & Ramaswamy 2004b, 5). This is a definite shift in attitudes as, traditionally, value creation was perceived to occur inside the company, whereas consumers were outsiders (Prahalad & Ramaswamy 2004b, 6) and consumers were even believed to destroy the value that companies had created for them (Ramirez 1999, 49). Now, consumer-to-consumer interaction and dialogue provides consumers with an alternative source of information and perspective (Prahalad & Ramaswamy 2004b, 6), thus making them better informed and independent from information received from the company. Value is created mutually (Ramirez 1999, 50) and consumers, based on their own perceptions of how value should be created with them (Prahalad & Ramaswamy 2004b, 6), can select companies with which they want to have an interactive relationship. Companies indeed have to interact with consumers and consumer forums whereby, in a situation of close interaction and learning, consumers' attitudes, emotions and needs are best understood (Prahalad & Ramaswamy 2004b, 11).

Both positive and negative emotions shown in discussion forums are primarily related to product performance either satisfying or annoying the consumer (Phillips & Baumgartner 2002, 243). Consumers can experience strong emotions and, especially, openly show them at the initial use of a new product (Wood & Moreau 2006, 44). A positive experience will most likely lead to a high intensity of liking, joy and pride, whereas a negative evaluation will cause intense emotions of frustration and dislike, even anger (Éthier et al. 2006, 636). In addition to product performance, negative emotions are closely linked to unfair service (Guchait & Namasivayam 2012, 216; Rad 2011, 791) or unmet consumer needs (Rad 2011, 791). An unsatisfactory service process will most likely cause frustration among consumers, thus making them

unwilling to recommend or patronise the company (Guchait & Namasivayam 2012, 221). Happy consumers not only use the product, but also help to attract more consumers through positive postings in online forums (Chea & Luo 2008, 30).

In general, positive usage emotions cause a positive attitude and negative emotions negatively influence consumer satisfaction (Phillips & Baumgartner 2002, 250). Although negative emotions can lead to online complaints (Chea & Luo 2008, 29), they can be influenced; even dissatisfied consumers value dialogue with companies in discussion forums. In addition, positive consumer behaviour can be influenced (Éthier et al. 2006, 627) by ensuring realistic usage expectations (Phillips & Baumgartner 2002, 251) and providing a high quality interaction platform (Éthier et al. 2006, 627). Companies have indeed created such interactive platforms to both interact with consumers to determine user experiences and smooth their expectations of products and also to activate their employees in social media interaction.[22]

2.5 The framework for idea generation in discussion forums

Discussion forums typically offer large amounts of unstructured and undirected communication that contain product improvement ideas. As such, they are a relevant source for idea generation. First, it is much less expensive to screen products in the early stages than in the later stages and each stage can improve the product and its positioning so that the likelihood of success increases (Dahan & Hauser 2001, 6). Second, the better the idea generation process, the greater the chance of success with less risk of having to commit further time and resources to revisions (Bragg & Bragg 2005, 24).

Figure 6 presents the theoretical framework of the study. The parts of the figure directly being analysed in this study are shown with a light colour, whereas facts influencing or forming the background are darker.

[22] IntraSee (2013) or Invesco (2013)

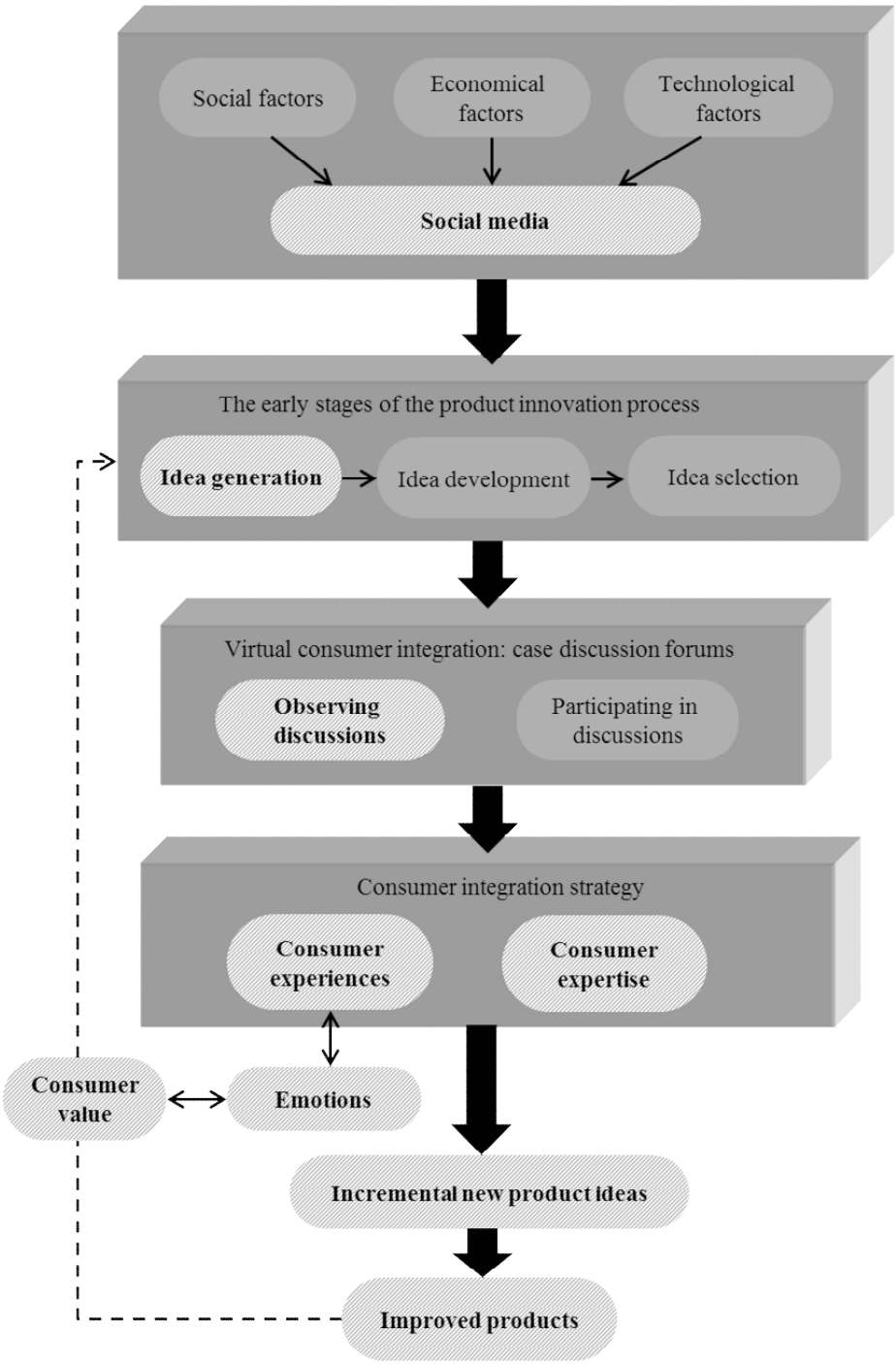

Figure 6 The theoretical framework of the study

Social media and the new social, technological and economic factors that it represents is at the core of this study. It is inexpensive and easy to use, as only

basic IT-skills and an Internet connection are needed. In addition, social media has made it possible for anyone to participate regardless of geographic location, time or position. Anyone can publish texts, participate and make comments.

Discussion forums contain discussions and comments emphasising both consumer experiences concerning a product and their expertise related to the technical knowledge of the focal product and also training. As past research (e.g. Chebat e al. 2005; Chmiel et al., 2011) has recognised the important role played by emotions in online environments, their influence in consumer experiences also receives attention in this study. Finally, the possibility of finding new product innovation ideas in online discussions is analysed.

It was the goal of this study to observe discussions in the forums without direct participation, to determine whether the content contained promising ideas for incremental product innovation. The study was qualitative in nature, comprising observation, supporting interviews and other company related written material. The methodological choices of this study are further discussed in the following chapter.

3 RESEARCH DESIGN

3.1 Research approach

It needs to be remembered, when planning the research method, that the problem itself defines the best method for its solution (Arbnor & Bjerke 1997, 6). The research question for this study is "how can discussion forums be employed in idea generation?", which is inherently rather abstract and vague. Typically, preliminary research questions are first defined by identifying a wider field of interest and then formulating them into a couple of specific questions, as is typical in a qualitative study (Eriksson & Kovalainen 2008, 38). Thus, this study's research question is divided into four more specific sub-questions: to what extent do discussion forums contain potential ideas for incremental product innovation? What would be the potential of discussion forums in creating consumer value? How should consumers be integrated into idea generation for the company to determine unmet consumer needs? How do consumer emotions towards an innovation evolve along the online discussion?

Eriksson & Kovalainen (2008, 39) and Silverman (2011, 25) argue that, typically, "how" questions focus on causes and consequences, thus aiming at qualitative answers. The research question for this study, "how can discussion forums be employed in idea generation?", aims indeed at exploring the phenomenon and finding a qualitative answer. To gain this desired understanding, the study aims at describing and analysing the discussions to determine the existence of incremental product innovation ideas. Furthermore, the need to integrate consumers into the process and the possibility of creating consumer value within it was studied. The empirical data helped to gain the desired deeper understanding by providing information on subjective consumer experiences and wishes. This subjectivity and emphasis on participants are typical of qualitative research (Puusa & Juuti 2011, 47) and also the situational context and relationships in the studied environment (Denzin & Lincoln 2000, 8).

Typical of qualitative research is the strive towards deep and detailed information (Patton 2002, 14), which is also the aim of this study. Furthermore, Dabbs (1982, 32) regards qualitative research as concentrating on the meanings, concepts' definitions, metaphors, symbols, characteristics and description of things; in other words, what, how, when and where are important questions. As this study aims at understanding how discussion

forums can be employed in idea generation, the qualitative research method is considered a relevant approach.

A thorough familiarisation of the exta nt literature and the creation of the preliminary theoretical framework preceded the empirical part presented here. Thus, the author had some idea of what propositions to test against the empirical data and for what elements to search, albeit at a rather abstract level. According to Ghauri & Gronhaug (2005, 202), qualitative research, with its flexible and exploratory character, is needed when the problem under study is unstructured and previous insights modest. The aim of this study is to gain deeper understanding of the phenomenon, that is, the possibility of employing social media discussion forums in product innovation. Previous insights were modest and, therefore, a qualitative approach seemed to be appropriate for this study.

A preliminary theoretical framework was presented in subsection 2.5. It inevitably means that some thematic issues are disregarded while others are considered more important (Panula 1997, 25–27). The study background comprises several theoretical streams; therefore, it can be stated that the study has exploratory elements. There was a large amount of available material concerning product innovation, virtual product innovation, consumer integration and creating consumer value that were combined to form the theoretical background of this study. Miles (1979, 591) considers a preliminary framework beneficial for the study if it can be modified over the study process; the framework is then left open for changes in relation to findings from the empirical material. This approach was found relevant in this study as the preliminary information and assumptions were only accurate to some extent. The modified framework is presented in subsection 5.1.

3.2 The data collection

The collected material was by its nature qualitative, comprising a large number of discussions in written form. The material was available for anyone to see on the Internet and comprised postings created over several years. A challenge was presented by its abundance and unstructured character; a discussion typically contains several themes that run parallel to each other. Furthermore, as the discussions that were held between anonymous discussants had ended, it was not possible to ask clarifying questions or interview the participants.

To be able to answer this study's research questions, extensive data were needed in a form of free uncontrolled discussions. Therefore, the data needed to be found in discussion forums that are open for anyone to join, in which the discussion is run by the consumers and not tightly controlled by a company.

As such, consumers' interests, ideas, emotions and innovative potential can be studied.

The academic literature (e.g. Jawecki et al. 2009; Jeppesen 2005; Lüthje 2003; Lüthje et al. 2006; Tinz 2007) show the importance of sports enthusiasts in product innovation as they are posited to be the most eager and interested innovators. Jawecki et al. (2011, 146) even argue that innovations typically occur in the field of sports. The empirical material for this study was chosen from this perspective. First, all possible Finnish discussion forums containing discussions on sports were checked. Various search engines, such as Google, were employed to identify discussion forums related to sports, which are presented in table 8.

Table 8 General discussion forums analysed in this study

Forum	First discussion analysed	Observation date	Number of analysed discussions
www.suomi.24.fi	November 2003	October 2010	28
www.lenkkivihko.fi	May 2007	October 2010	3
www.kiloklubi.fi	May 2006	October 2010	36
www.fillarifoorumi.fi	November 2003	October 2010	49
www.nojatuolifoorumi.fi	March 2006	October 2010	1
www.dvdplaza.fi	February 2007	October 2010	1

The forums shown in table 8 contain some of the biggest and most popular Finnish discussion forums. The discussions were chosen for analysis in October 2010, by when the last comments had been posted. All the discussions relating to sports were read, from which it became obvious that the most discussed sports-related product group are heart rate monitors, especially Suunto products. Jogging shoes and cross trainers were the next most discussed product groups; however, they are of lesser importance as the number and length of discussions related to them were considerably smaller. In total, 118 discussions relating to heart rate monitors were collected for analyses.

To enable comparison of general discussion forums and those created by a company, Suunto's own discussion forums were chosen for further research. Table 9 lists the discussion forums analysed in the study. All of Suunto's 22 forums were opened in January 2006. The analysis period spans several years as observation and data collection were conducted in October 2010. In total, there were 2,069 discussions in Suunto's discussion forums.

Table 9 Suunto's discussion forums analysed in the study

Forum	Number of analysed discussions
Suunto TC1	28
Suunto TC3	298
Suunto TC4	268
Suunto TC6	479
Suunto Software	215
Suunto Smartbelt	60
Suunto Sports	30
Suunto Team pod	9
Suunto Bike pod	26
Suunto Cadence pod	8
Suunto Comfort belt	24
Suunto Diving- free diving	10
Suunto Diving- scuba diving	29
Suunto Diving products	162
Suunto Diving software	91
Suunto Foot pod	73
Suunto GPS pod	78
Suunto Outdoor products	89
Suunto Outdoor software	11
Suunto Outdoor sports	1
Suunto PC pod	53
Suunto Road bike pod	27

Brief scrutiny clearly showed that there are differences between the contents in general discussion forums, open to anyone on the Internet that concentrate on any topic, and forums owned by companies. The amount of material was extensive, comprising ten full folders of paper and, in total, 2,187 discussions read in both general forums and Suunto's own discussion forums. Therefore, the data were considered sufficient to answer the research question.

As presented in figure 7, supporting material was gathered to further clarify the research questions. The supporting material helped to clarify the company perspective in the study as the discussion forums mainly concentrated on discussions between consumers. Suunto's head of digital services was interviewed at the company's premises in December 2010 to determine its existing procedures in social media. Additionally, the questions were further clarified by email in December 2012 and also a previous trainer, hired by Suunto to work in the discussion forums, was contacted and interviewed via email.

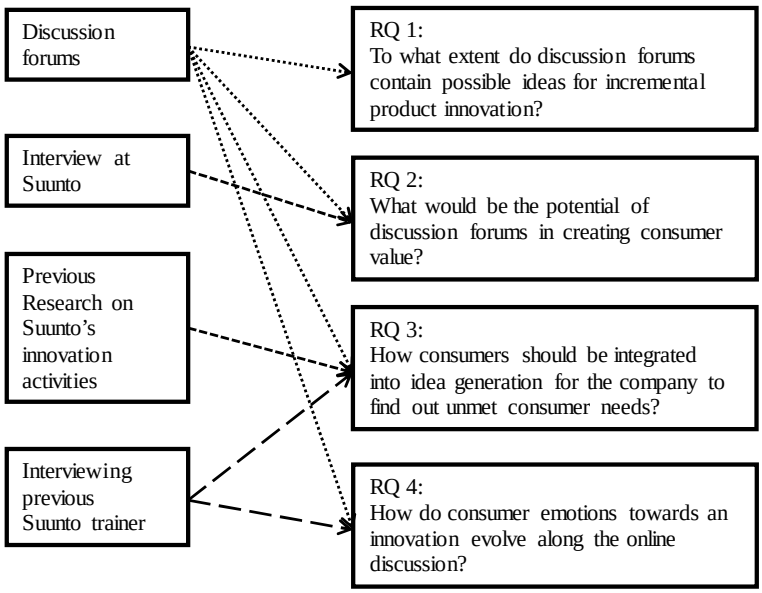

Figure 7 The link between different types of data and the research question

In addition, articles relating to Suunto's product development were sought on the Internet and it was noticed that Suunto's product innovation activities had been of interest to several researchers (e.g. Kotro 2005; 2007; Kotro & Pantzar 2002; Valtonen 2005; Valtonen & Ainamo 2008; Hänninen 2007; Pantzar 2005; Sandberg 2005). These articles provided a large amount of interesting and necessary information on Suunto's product innovation perspectives. The interview at Suunto also revealed that the company had indeed realised the importance of consumers' ideas and was planning to launch a specific innovation platform on which they could be presented and discussed. As this platform was opened during the course of the study, it was also studied together with company websites.

3.3 The data analysis

The research data were analysed by employing the content analysis method. Content analysis can be defined as "a research technique for making replicable and valid inferences from texts to the contexts of their use" (Krippendorff 2004, 18; 1981, 21) and the aim in its utilisation is to develop an understanding on the meaning of various forms of communication (Cavanagh 1997, 7). Content analysis techniques are employed in data analysis to organise and categorise existing data (Berg 2004, 287) with the aim of describing the material

in question in a summarised and general way (Tuomi & Sarajärvi 2012, 103). However, it needs to be realised that, with content analysis, it is only possible to organise the collected data for further conclusions (Grönfors 1982, 161). The benefit of employing content analysis lies in its ability to address large volumes of textual data and different textual sources with the link between material and results shown, although the method demands a clearly defined and not overly extensive research question (Elo & Kyngäs 2008, 114; Hakala & Vesa 2013, 218).

Content analysis can be employed in either an inductive or deductive way (Elo & Kyngäs 2008, 107). The inductive approach is a better choice if there is insufficient existing knowledge on the question under study or if the existing knowledge is fragmented (Lauri & Kyngäs 2005, 61). In inductive content analysis, categories with which to arrange the data are derived from the data (Elo & Kyngäs 2008, 107) and the data move from the specific to the general so that a greater amount of data are observed and then combined into larger and more general categories. The findings must be generalisable to the larger population from which the study's sample has been drawn (Neuendorff 2002, 12). The inductive approach was chosen to enable the present research questions to be answered. Thus, the data were extensive and fragmented both due to the large quantity and nature of online discussions. The fragmented data were generalised to promote a clear and systematic analysis process.

The general idea in content analyses is to establish a set of categories and then count the number of instances that fall into each category (Silverman 2011, 64). In discussion forums, the data can include, for instance, the number of participants, thematically relevant discussions and particular discussion forums (Hakala & Vesa 2013, 219). In this study, the selection of the data was conducted in accordance with the thematic described in subsection 3.2. The content analysis process varies according to different researchers, as presented in table 10.

Table 10 The content analysis process

Krippendorff (2004, 83)						
Unitising the themes.	Sampling the material.	Coding the material.	Summarising and simplifying the material.	Drawing conclusions on the phenomena.	Narrating the answer to the research question.	
Marshall & Rossmann (2011, 209)						
Organising the data.	Immersion in the data.	Generating categories and themes.	Coding the data.	Offering interpretations through analytic memos.	Searching for alternative understanding.	Writing the report.
Elo & Kyngäs (2008, 107)						
Preparation.			Organising.		Reporting.	
Miles & Huberman (1994, 155)						
Reducing the material by finding recurrent relationships.			Clustering or categorising the material.		Creating theoretical concepts.	
Content analysis process in this study						
Organising the whole data in Excel.	Organising the selected 20 discussions in Excel, comment by comment.		Defining criteria and categorising the data in NVivo.	Analysing the results.	Relating the material to the literature on the subject.	

Krippendorff (2004, 83) and Marshall & Rossmann (2011, 209) show the process with more steps, thus giving a detailed and precise description of the process. More simplified variants are presented by Elo & Kyngäs (2008, 107) and Miles & Huberman (1994, 155), for whom the process comprises only a couple of basic phases. Other researchers employ the same definitions but emphasise a particular additional aspect, such as making comparisons between the data (Pietilä 1976, 24; Toivonen, 1999, 128) and critical selection of the units to be analysed at the initial stage of the content analysis process (Hakala 2003, 23). Despite their minor differences, the same general principles in these processes are highlighted with the same colours in table 10. The first phase, comprising the sampling and organising of data, is shown here as white. The next stage, aimed at categorising and defining criteria, is grey and the last stage comprising analysis and conclusions is the darkest.

This study followed the same stages as the other models; the research questions were defined first and then the data were collected as described in subsection 3.2. The selected discussions in the 28 forums were all fully read and systematically summarised in an Excel table (appendix 1). The following information was extracted from all the discussions and written down: topic, headline for the discussion, start date, product to which the discussion was

related, forum in which the discussion was posted, number of comments in the discussion, reason for the discussion (i.e. problem / advice to others / feedback), main point in the discussion, summary of the discussion and result (if any). A rudimentary analysis was conducted employing the resultant Excel table.

As most of the discussions were short and were not found very relevant in relation to the research question, the 20 longest discussions (i.e. number of comments) were chosen for further evaluation. Another Excel table (appendix 2) was completed from each discussion and each comment separately. The following headlines were defined during the reading to categorise the data: comment number, name of the person, status of discussant (i.e., if mentioned, a newbie, senior member, club host or moderator), product mentioned, main point in that specific comment or question, comment/question, same theme/theme changes, positive/negative, consequence (if mentioned), innovation ideas (if mentioned), usability/usefulness/excitement. The last headline was added only later, and then removed as it was found not to be useful because it was realised that it can be defined in the NVivo program.

Berg & Lune (2012, 4) point out that qualitative studies demand specialised tools and techniques. In addition to the content analysis technique, the NVivo program was employed to organise the data in this study. NVivo was chosen from among possible computer-based tools due to the opportunities it offers for data categorising and analysis and its popularity among fellow researcher colleagues. As its best, the searching and organising tools in the program help the researcher to interrogate the data and, thus, improve the analysis process by validating impressions already formed from the data (Welsh 2008, 5). Computer software helps and supports coding and analysing over the analytical process, making data easily accessible and thus strengthening credibility, replicability and even the substance (Sinkovics et al. 2008, 709). Thus, in content analysis, a combination of manual and computer assisted methods will achieve the best result (Welsh 2008, 1).

The tables created in Excel were downloaded into the NVivo program and analysed, although materials from Suunto's forum and other discussion forums were being saved separately for comparison and were coded as shown in table 11.

Table 11 Nodes from the discussions

Source	Nodes	Number of references[23]
Suunto discussion forums	Basic factors	12
	Performance factors	132
	Excitement factors	4
	Buying decision support	37
	Efficient training & training results	55
	Technical advice	120
	Usage possibilities	1
	Direct wishes for the company	9
	Moderator	3
	Trainer	28
	Affection (love)	16
	Anger	93
	Contentment	25
	Fear	3
	Frustration	26
	Happiness	23
	Pride	0
	Sadness	2
	Shame	0
General discussion forums	Basic factors	29
	Performance factors	116
	Excitement factors	3
	Buying decision support	281
	Efficient training and training results	35
	Technical advice	239
	Usage possibilities	19
	Direct wishes for the company	14

Words, sentences or longer texts, when found, were copied to the following groups: usage possibilities, direct wishes for the company, technical advice, efficient training and training results, buying decision support, basic factors, performance factors and excitement factors. In addition the comments of a so-called social media evangelist (i.e. a trainer hired by Suunto to give advice in the discussions) and the moderator were copied from the discussions in Suunto's discussion forums. It is important to start the coding process with a preliminary list of categories but be prepared to change it, if necessary, over the process (Bazeley 2007, 32). In this study, the original idea was changed as

[23] Words or sentences mentioned in the discussions, not necessarily whole postings.

the category ‘direct wishes for the company’ was later deleted as unnecessary because the wishes were already included in other categories. The analytical process was continued by categorising the emotions affection (love), anger, contentment, fear, frustration, happiness, pride, sadness and shame from the ten longest discussions in Suunto’s discussion forums.

Tesch (1990, 55) describes any information gathered that is not expressed in numbers as qualitative. However, Brannen (2005, 175) and Alasuutari (2011, 193) find this claim to be overly simplistic as numbers are also part of qualitative research, which facilitates description and presentation of the data. This was the case also in this study, as qualitative data was partly described with percentages and amounts in numbers to describe more clearly the characteristics of the data.

To enable the study’s four research questions to be answered, four separate articles have been written. Each article describes, from a distinct perspective, the discussion forums and their potential in idea generation. The articles are introduced and summarised in the following chapter.

4 DISCUSSION FORUMS AS A SOURCE FOR PRODUCT INNOVATION

This chapter summarises the four original articles, which together form the whole of the research. Each article clarifies the research questions and contributes to the interpretation process as presented in figure 8. The key themes in the articles are briefly described in the following subsections together with an assessment on each article and its role in contributing to the research questions. In addition to summarising the articles, further study and conclusions are added to the original articles here.

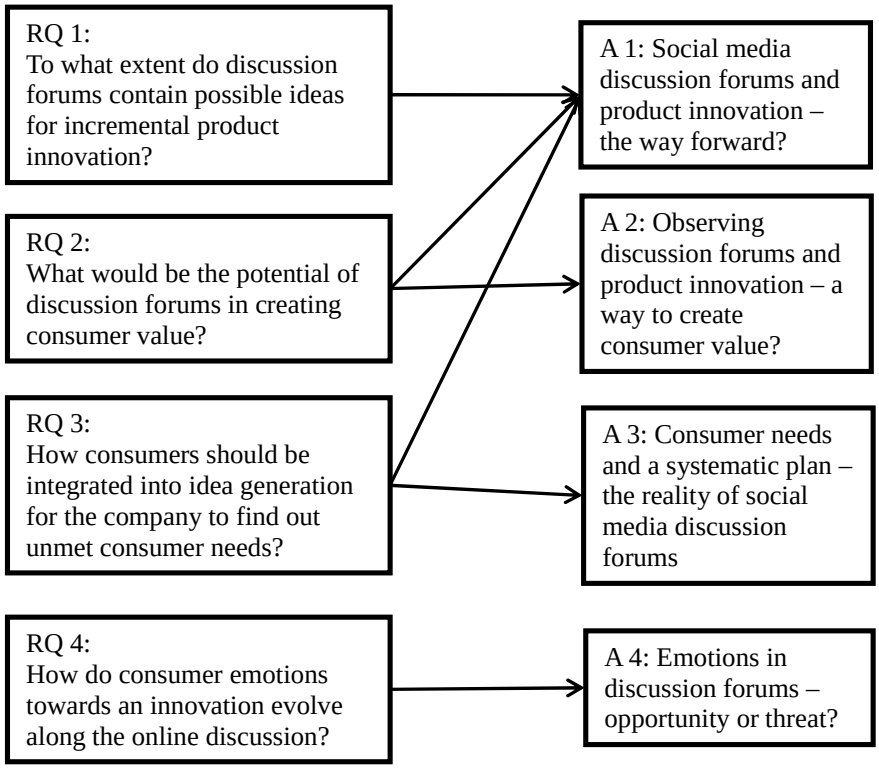

Figure 8 The connection of the research questions to the articles

4.1 Article 1: Social media discussion forums and product innovation – the way forward?

The purpose of article 1 (A1) is to study the special nature of discussion forums and to determine the extent to which they contain potential ideas for incremental product innovation. The results show that, if a company can find the relevant pieces of information among the abundance of information, discussion forums can indeed be regarded as a source of product improvement ideas. Consumers on the Internet are no longer passive; they are increasingly becoming more sophisticated consumers who are able to utilise the Internet's potential (Cateora 2007, 426–427). Discussion forums are popular; consumers utilise them to exchange experiences regarding the latest equipment, share ideas for product modification or to develop entirely new concepts (Jawecki et al. 2009, 1). From this background, many companies have started to employ social media to find ideas for product improvement or to test existing ideas (Wright 2006, 51).

Participating in discussions or maintaining them can help a company to connect more deeply with their customers and gain valuable consumer insight (Volmer & Precourt 2008, 54). Discussion forums can indeed replace traditional focus groups, online surveys and panels, and it is easy to reach large groups, test ideas and get feedback. Speed is one of the most attracting characteristics of social media as it is possible to get an unlimited number of answers in days, if not in hours. However, rapid speed in conversations and the need to be present set high demands for companies, especially as direct company interventions are not appreciated.

To enable the study's research questions to be answered, material from 28 discussion forums was collected and analysed as discussed in subsection 3.2. Participants in the discussions are indeed eager to discuss and, especially, to solve problems. Almost all of these discussions started with a concrete problem. Mostly, they are very short; either a solution is found very quickly or the discussion is stopped for being uninteresting. Although the participants are visibly eager to discuss, a link to a previous discussion is quickly given if the same topic is raised again. This argument is further supported by a previous study by Jawecki et al. (2011, 149), in which it was noticed that new members are typically reminded in a determined way to search the community archives before asking questions that have already been discussed.

Although Suunto was not originally chosen as a research target (see subsection 3.2), it fitted the research objectives very well. It is a company that was originally known mainly for field compasses and diving instruments; however, through heavy investment in product innovation it became increasingly related to the context of adventure sports with meanings linked with

product attributes becoming increasingly important (Kotro & Pantzar 2002, 32–33). Suunto's technology has been evaluated against real-life demands and the strategy has been to focus on sports activities where measurement technology, data processing and specific algorithms create benefits for active participants interested in sports (Kotro 2007, 156). In addition to technology, the company has increased its investment in design and visibility (Valtonen & Ainamo 2008, 14) and based its research and development on fashion, as it has been realised that an essential part of the pleasure of a product comes from its image (Kotro 2002, 44).

Buying behaviour support is one of the main themes in the discussions (see appendices 3 and 4). The beginning of these discussions is related to hesitancy and the need for advice on the kind of heart rate monitor that should be bought. In the general discussions, the headings vary more and are repeated several times, even during the same discussions, which make the discussions difficult to follow. Typically, a person needs advice on buying a heart rate monitor for sports, but does not have an idea concerning its use. The answers for its use are also rather general. In a positive case, a typical answer is "I have this heart rate monitor and it works well", whereas negative answers vary considerably. The discussion remains at a rather general level; further clarifying questions and answers are related to very concrete topics of, for instance, where to find and buy a heart rate monitor and at what price. In Suunto's discussion forums, advice for a buying decision in a general form is asked only twice and specifying questions are also few in number. Answers to more specific questions are more concrete and concentrate on different technical details such as the potential to customise the screen, on training charts and compatibility.

Discussions relating to a technical problem, efficient training and training results show similar characteristics. Although all of the discussions share some features, such as participants' eagerness to help each other and ask and offer advice, the discussions in Suunto's discussion forums are more concrete and technical. The discussions in general discussion forums state the problem, such as "what is the real benefit of a heart rate monitor?", "heart rate is a bit strange, especially during the recovery period" or "my calories are calculated incorrectly". However, there is no specific information, merely the stating of a fact, and the answers are equally general; for instance, "monitor your morning heart rate every morning to see if you are overtraining" or "I think that calories consumption versus heart rate has a lot of differences". Discussions in Suunto's discussion forums are more concrete with typical comments being "I´ve updated my fitness level to 13 and my activity class to 7.5 since last adding to this forum. I attach my new schemes", "you might want to check to validate the deep interdependence: take a fast walk over a particular track,

then run over the same track and compare the records. Attach the foot pod as close to your toes as possible".

In reality, the discussion ends when the stated problem has been solved, unless another question is asked that restarts the discussion. This nonlinearity, which was especially visible in the general discussion forums, makes the discussions difficult to predict or even follow. In addition, as in real-life conversations in general, a comment is not always necessarily related to the previous comment and might link to any other comment or question stated during the conversation.

When interviewed, a trainer hired by Suunto to participate in the discussions and answer training-related questions argued that there is a huge range of knowledge and understanding in the discussions. Some participants are certainly very experienced, although most did not follow the structured training plans provided by the software, which was causing their problems. As such, the trainer evaluated the most prevalent ideas to be mainly hopes and wishes without any promising potential, as he regarded there to be more than enough potential in the functionality of the products. However, he felt that the software and analytical tools could have been vastly improved, and that the participants provided the company with many good suggestions, which it was reluctant to pursue.

It is, indeed, important for participants to be able to help each other or even the company; for example, in Suunto's discussion forums, some participants offered their help to the company to improve the products in question. A sure way to gain answers is to ask for help. Social media experts warn against company participation as it is not appreciated in social media, in which interaction between private individuals is a shared value. It is possible to find incremental product improvement ideas by only observing the discussions, although this scheme offers limited results. A company role that is accepted, sometimes even demanded, in discussions is that of an information provider or an advice seeker. However, the actions most definitely need to be planned in advance as social media "remembers forever" and comments that are considered "stupid" will be delivered to large audiences. Suunto's interviewed trainer argued that it is indeed very difficult to write user guides that explain everything and, as such, it would be beneficial for a company representative to answer questions. Furthermore, Suunto's lack of responses or the content of its responses did not help and further complicated the issues. Therefore, it is important to plan company interventions with care.

The extant literature on consumer integration online is primarily based on the company perspective, perceiving consumers in a rather passive role or, at most, getting involved in activities arranged by the company (Daecke 2009; Franke & Piller 2004, Füller et al. 2009; Soll 2006). In addition, innovative

consumer communities have been studied (e.g. Hienerth & Lettl 2011). In these communities, either there has not been any interaction at all with the company or the consumers have asked company representatives to participate only at a very late stage in the process. Thus, the findings of this article complement the picture by adding understanding on interaction between consumers with only limited, although possible, company participation. Furthermore, it shows the potential of discussion forums in product innovation by pointing out the existence of ideas in, especially, company maintained discussion forums. As previous studies relating to the early stages of the online product innovation process have concentrated on management practices (Herstatt et al. 2003; Herstatt & Verworn 2001) and also tested a special solution (e.g. toolkits and ideas competitions) to activate consumer participation (Soll 2006; Füller & Matzler 2007), this article complements the previous findings.

The difficulty in social media lies in keeping the best target groups and participants interested in the discussions and having them repeatedly return. This way, real incremental product innovation ideas can be found and discussed in the forums. It is easy to establish a forum and to start a discussion but the real challenge, which definitely has to be addressed before any actions proposed in the discussion forums relating to product innovation are started, is the problem of continuous attraction for innovative-minded participants and the form of continuous company intervention. Two further ideas for company intervention will be discussed in the next subsection.

4.2 Article 2: Observing discussion forums and product innovation – a way to create consumer value? Case heart-rate monitors.

The results reported in article 2 (A2) show the clear and definite difference between the general discussion forums, open to anyone on the Internet and comprising discussions concerning almost anything, and those established and maintained by the focal company. As product innovation has been studied in online environments from a participatory perspective (Füller et al. 2009; 2006; Gebauer et al. 2012), the purpose of this article is to study both the possibility of utilising discussion forums in product innovation and the potential to influence consumer value by simply observing the discussions. As the sub-criteria for consumer value, that is, basic, excitement and performance factors, have been employed in online product innovation research (Füller 2010; Füller & Matzler 2008; Füller et al. 2009; 2006; Gebauer et al. 2012), these factors were sought in the discussion forums.

It is, indeed, clear that the discussions contain basic, performance and excitement factors, of which performance factors are the most prevalent.

Answers concerning basic functions are rarely sought in the discussions; it is potential extra alternatives and functions that cause the discussions. As such, participants are not only sports enthusiasts, they are also lead users; users actively looking for a solution to their needs, who are currently experiencing needs that will later be experienced by many users in the market place (Urban & von Hippel 1988, 570; von Hippel 1986, 795).

The consumers in discussion forums are unlikely to be able to develop new product ideas by themselves; company intervention, at least, is needed to select promising ideas for further development. From the discussions, it is not difficult to distinguish who are the most experienced and knowledgeable participants as their comments and advice show deep expertise and enthusiasm, which are common characteristics of lead users (Ernst et al., 2004, 123; Schreier & Prügl 2008, 331; von Hippel, 2001, 771). Assumedly, these participants will be eager to participate in product development if they find the process rewarding, at least in the form of improved products (von Hippel 2007, 302). The most enthusiastically discussed topic in this research is the training; thus, discussion created on the heart rate monitors' improved accuracy and its potential to measure and calculate training results and training effects is likely to evoke a deep interest among lead users to participate. If a company started a discussion on efficient training and training results (including their product's accuracy), it would certainly gather a lot of enthusiasts to discuss the topic and voice improvement ideas and also satisfaction, especially if they feel that their input is appreciated and taken seriously.

Lead users are difficult, if not impossible, to distinguish in general discussion forums. This is mainly due to the fact that the general level of discussions is lower; the discussions concentrate on common functioning of the heart rate monitors, whereas detailed descriptions of the failures or consumer wishes are non-existent. However, lead users are easy to distinguish in Suunto's discussion forums as they, first, employ the title 'senior expert' (although this is a self-chosen status), fill their comments and advice with detailed descriptions of values, functioning and even charts of training results and their potential inaccuracy.

It needs to be remembered that Suunto's products are aimed at being utilised in difficult adventure sports' conditions. Thus, they are luxury products because the hobby itself is expensive, requiring travel, free time and costly equipment (Kotro 2002, 40). The purpose of fitness products, including heart rate monitors is, however, rather ordinary: to help people improve their physical condition. From this background, the forums attract both extreme sports enthusiasts and also ordinary people interested in using heart rate monitors in sports. Thus, deciding on the correct target group with the best potential requires serious consideration.

It is certainly possible for a company to find interesting information relating to basic, excitement and performance factors only by observing the discussion forums. The extent to which these ideas for improved products are of value without any company intervention is, however, questionable. Typically, comments are not all related to the discussed question and a discussion can suddenly take a completely different turn, thus closing discussion on a particularly interesting product improvement idea. In addition, it would also be crucial to ask and determine the importance attached to the stated idea by other participants. Thus, observation alone will not maximise the potential of the discussions. This would certainly be a topic for further research, especially considering the role of a product innovation evangelist.

A way to solve the dilemma of limited company time resources has been presented in the social media marketing literature. As success in social media requires presence and active dialogue (Mustonen 2009, 37), which is challenging to most companies, Dwyer (2007, 75–76) presents a so-called social media evangelist to ensure the positive effect of word-of-mouth. A typical evangelist is a participant in an online community and recruited for a reward to spread a positive message across the community and other networks. As these networks grow and become connected to other networks, the positive message spreads to them all (Dwyer 2007, 76).

This role of a product innovation evangelist was further considered during the study. One participant stands out in the discussions in Suunto's discussion forums and it was found in an interview at Suunto that he was a trainer hired by the company whose role was to address training-related problems. It was clear that he had a special role and was appreciated by the other participants. This trainer either commented and offered unprompted help or he was asked for help directly. He commented a total of 28 times in the ten longest discussions, whereas the official Suunto moderator made three comments in total.

There is a clear difference in other participants' attitudes to these two persons. Although the Suunto moderator answers politely and in detail, his answers are not received well. For example, to his answer for a new product software solution, "so far, limited resources have been allocated to our product", the following comments are written: "I think that you can read that as no chance", "sad that Suunto is so stubborn" and "we just need a real answer from Suunto". At times, it seems to greatly annoy the participants that the moderator does not answer; comments become overly negative, even hostile: "why isn´t Suunto reacting, more than 6000 viewers here…?", "we want Suunto to listen, but they are too busy", "I´m protesting about Suunto's way of treating their customers. No answers…", and "they don´t have time, they are in Chamonix relaxing".

Another interesting feature in the discussions with the moderator relates to the dialogue. The moderator answers a comment relating to a new product upgrade. The participant had received some information from Suunto's helpdesk concerning its plans to charge for the new upgrade, is upset and planning to change to a competitor's product. The moderator states that the planning process has taken more time than anticipated and explains some functional details. Another participant joins in and asks about the functionality; although, from then on, the question is answered by the other participants. The moderator comments again only once, later giving a link to the manual; however, other than that, the discussion is maintained between the participants with only a lot of wondering and guessing. It is clear that the participants are not overly happy with this. Social media definitely puts high pressures on companies as active interaction is required in a very fast environment.

This conclusion on the difference in attitudes towards an official company representative and an outside trainer is further supported by the trainer himself. When interviewed by email, he states that participants in discussion forums typically are hostile to companies but perceive an outside advisor as more neutral. In his opinion, the hostility comes from a lack of understanding on the product or on the technical aspects of the product or software. The participation of the trainer is indeed always found positive and, compared to Suunto's moderator, there are no critical or negative comments concerning him. In some cases, his responses are even requested: "xx (name removed) should answer, it's too complicated for me", "xx (name removed) recommends to…" and "it will be interesting to hear what xx (name removed) will say".

Most of the trainer's comments (see appendix 5) clearly relate to the other participants' questions on how to get the most out of the training and achieve the best results. In some cases, training charts in Excel are added to the question. In addition to training efficiency, the trainer also gives his opinions during the discussions. He is clearly a supporter of Suunto's products and stops several negative discussions, especially those relating to the software.

It would be very interesting to develop this practice further by changing the content of the trainer's work. In addition to answering questions on training and offering practical training tips, the trainer could also maintain the focus of the discussion on an interesting idea that has been mentioned to further develop and receive opinions on it. In product innovation, the role of a product innovation evangelist will have to be defined by the company; this will include maintaining a positive tone in the discussions, thus giving advice to those who are frustrated with the company and the products, stopping a negative chain of comments and maintaining discussion on a particular product innovation idea for its further development.

A definite further step forward would be to create a closed forum for the selected lead users, to which access would be given only in accordance with some clear criteria relating to enthusiasm, dedication, interest and expertise in the matter. This notion of a closed innovative forum is further supported by the trainer, hired to participate in the discussions on the company's behalf. In his opinion, discussion forums that are open to anyone seem to attract extreme comments and also make it easy for participants to hide behind their anonymity. Therefore he would prefer integrating the most professional consumers to a closed innovative forum. Thus, pure observation alone will not maximise the potential of the discussions. This is certainly a topic warranting further research, especially considering the role of a product innovation evangelist. This solution will link this study to previous research on product innovation in online communities (Füller 2010; Füller and Matzler 2007, Gebauer et al. 2012; Jawecki et al. 2009), online idea competitions (Soll 2006) and toolkits (Bartl 2006). In these studies, the consumer is regarded as an active participant who interacts closely with the company. This requires active consumer integration, which will be further discussed in the following subsection.

Product innovation in relation to value creation has not raised special interest among researchers (Füller et al. 2006, 2). Previous studies have concentrated on value coming from interaction (Woodruff 1997, 151), creating value in conjunction with consumers (Ramirez 1999, 50) and understanding the new active, informed and connected consumer role (Prahalad & Ramaswamy 2004a, 4). This study complements the picture by offering information on consumer value creation in discussion forums without company interaction. As personalised consumer experiences relating both to the product and user experiences are considered key to value creation (Prahalad & Ramaswamy 2004b, 5), discussion forums with their ideas, opinions and conversation offer a potential source for value creation.

4.3 Article 3: Consumer needs and a systematic plan – the reality of social media discussion forums

The purpose of article 3 (A3) is to assess the possibility of utilising discussion forums with a systematic consumer integration plan for incremental product innovation.

Consumer integration requires both time and relationship building. The highest demands for a technical environment need interactive methods of cooperation such as, for instance, virtual group discussions or internet-based applications (Wobser 2003, 63). Virtual consumer integration has created many opportunities for companies. Different methods, such as user observa-

tion, interviews, questionnaires, gathering complaints and feedback, idea competitions, online focus groups (Skiba & Herstatt 2008, 6), virtual toolkits and communities for open innovation (Bley 2010, 301), are often mentioned in the literature. However, according to Füller (2010, 98), the biggest difference lies in companies' attitudes to consumers who are not only asked for their opinions, desires and needs but also required to contribute their creativity and problem-solving skills.

In this study, discussion forums are observed from outside with the results being complemented by interviewing a Suunto professional and a trainer hired by the company to answer training-related questions in the forums. This complements previous researches conducted in relation to online product innovation as, in those, consumer integration was based on active company participation by, for example, online innovative communities (Füller 2010; Füller and Matzler 2007; Gebauer et al. 2012; Jawecki et al. 2009), online idea competitions (Soll 2006) and online toolkits (Bartl 2006).

In this study, discussions analysed from the general discussion forums contain two popular themes: technical problems and finding help for a buying decision. In comparison to Suunto's discussions, the depth of commentary in these discussions is lower and they are generally short; although the number of comments might be large, in fact, several simultaneous discussions are being conducted and the original topic is obscured. Typically, the problem is stated as "what kind of a monitor should I buy?" and a couple of answers follow; in some cases, perhaps dozens of answers. However, the ensuing discussion typically comprises a couple of basic comments without detailed information that were quickly followed by another question: "I'm also buying a monitor, would xx be good?" This tendency, first to discuss without details, second, to base comments solely on opinions and, third, to disrupt the discussion with yet another question or comment not directly related to the stated problem is typical throughout general discussion forums.

The most typical themes in Suunto's discussion forums concern technical advice and efficient training, usually to achieve some higher goals such as taking part in a marathon or triathlon competition. The comments are often complemented by charts showing the development of training results, calculations showing inaccuracies in training and also figures relating to overall achievements with questions on how to reach the next level in training or to avoid "unnecessary recovery days recommended by the monitor". The excessive amount of information had also been noticed in Suunto, where the professionals had tried to utilise the forums for sourcing ideas. It had been realised, however, that to find or even read the discussions was extremely time-consuming and inefficient and, thus, it was a task only performed occasionally. The company specialists had, however, realised that consumers' ideas

can very well be employed in product innovation; although, it was pointed out that breakthrough ideas usually come from inside the company, whereas consumers only put forward some minor thoughts. As the importance of consumers' ideas had been realised, the company was planning to launch a specific innovation platform in which consumers' ideas could be presented and discussed. The opportunity to tell consumers how their ideas had been progressed and what has currently been accomplished as a result would definitely be positive. However, utilising general discussion forums, open to anyone on the Internet, to find product innovation ideas was also under consideration. The results of this study show, however, that this approach is unlikely to be successful.

Interviewing the Suunto representative for a second time revealed that the company did not build an ideation forum as planned. Such a forum was considered too slow for product idea generation and also it would take too long to implement these ideas. Although the company collects feedback and ideas through various channels, these ideas are typically already known by the company or too complicated to implement. However, the process is regarded as beneficial, not for finding new ideas but with helping to define what to prioritise.

In his second interview, the Suunto professional argued that a discussion forum is a good way for many companies to integrate their consumers, although not necessarily the best method. At least, the company should understand what additional value consumers want in its products or services and, thus, develop methods by which consumers can participate in product development, marketing or distribution. The best alternative might not be traditional discussion forums but, for example, Suunto's Movescount, which provides more visibility than any self-built digital advertising. Movescount also currently provides the world's biggest training bank with more than 200 training programmes. In addition, Movescount is utilised for customer support. With its MySuunto application consumers can ask each other questions and write product reviews; more than 2,000 questions and answers and also 100 reviews have been written there over the last six months. In December 2012, a service named Appzone was published on Movescount for research and development purposes. In this service, consumers can create their own functions for heart rate monitors. In practice, previously it was possible to provide 30 functions for sports; however, with Appzone, in which sports enthusiasts create and share functions, it is now possible to provide almost 1,000. The Suunto representative points out that the biggest challenge is determining how to ensure visibility and consumer integration in services that people utilise daily. From social media applications, Facebook, Twitter and YouTube have been found efficient with their share-functions.

According to the Suunto professional, small ideas and prioritisation come from consumers, but seldom “game changer” ideas. The best way to integrate consumers is with a service such as the abovementioned Appzone, where consumers develop the products, share their ideas (i.e. advertising) and can ask each other questions (i.e. support). The role of the company would be to provide the mechanism and environment for this. In a previous study conducted by Kotro (2007, 157), another option is the encouragement of company employees to participate in sports; having a sports background had traditionally not been valued. Gradually, however, it became an important factor and it was found necessary for sportsmen, both inside and outside the company, to participate in product development (Kotro 2007, 159).

All functions of a company can be linked with social media; however, every alternative needs to be carefully considered. The company professional argues that a discussion forum is seldom a good alternative. The most active consumers are not utilised for anything, nor data on them collected. General discussion forums are occasionally employed to find objective thoughts from consumers without any loyalty to a specific brand. It is also possible to get good insights on competitors.

Previously, Suunto had a trainer to answer training-related questions, but it was later considered an unnecessary cost and he was replaced by company representatives. It can be noticed from the discussions, however, that the trainer is treated with the utmost respect and thanked for his advice and help, whereas the Suunto representatives mainly face annoyance and criticism (see also subsection 4.2). Especially, the inability to get answers with concrete details and without any delay causes dissatisfaction and also an attitude that the company does not respect the participants and underestimates their expertise in product innovation. As the attitude to a trainer is so positive, this approach might very well be developed with a social media evangelist, mentioned in the results of article 2. Social media is undoubtedly regarded as interaction between individuals; however, expertise in training is tolerated, even met with delight, and the interaction could be built from this perspective. This approach will also address the requirement of active participation, whereby constant presence, promptness and rapid speed in answering is valued.

Whether an outsourced specialist alone can take responsibility for consumer integration in social media discussion forums is, however, questionable. In any event, a successful strategy requires a detailed plan concerning how and when to participate. First, even if originally directed at only one participant, a “wrong” or otherwise unsatisfactory answer will be posted for thousands of readers to see. Second, the discussions need in some form to be directed at deeper and more detailed product innovation ideas. Strategically, the company

needs to find the correct target groups; in this case, to select the most eager innovators in the discussions and integrate them into the process. Considering the speed and extensive amount of unnecessary information, a structural approach is needed to, first, find and, second, enable utilisation and further development of important information in the discussions. The discussions contain a remarkable amount of potential product improvement ideas that, at this stage, are only rudimentary and possibly only mentioned by an interested sports enthusiast. The best ideas can indeed be found and further developed and also consumer needs defined in detail, but only if a consistent dialogue is maintained between the consumers and company professionals. It should be remembered, however, that finding, discussing and developing product innovation ideas is a process that should be approached in step-by-step way, as instant results are impossible. Similar to other kinds of interaction, trust needs first to be built, after which reliable and trustworthy results can be achieved. A successful and hard-working company will certainly reap the rewards of creating a well-planned consumer integration strategy and find a clear competitive edge with passionate, committed consumers, clearly defined consumer needs and a better product fit to the market in the long term.

Many previous studies state the need to find and concentrate on the most innovative consumers (e.g. Bartl 2006; Lettl & Gemünden 2005; Lüthje & Herstatt 2004;). In relation to this, systematic approaches to identify and integrate the most potentially innovative consumers have been created (Lettl 2007). As innovation does not occur in isolation, but in interaction with all other participants (cf. Hienerth & Lettl 2011, 191), this study concentrates on all forum participants and thus adds understanding to the previous studies. Furthermore, it also provides more information on how to manage consumer and company interaction in forums, which was a clearly stated need for further research in a previous study (i.e. Snow et al. 2012, 13).

The results show that discussion forums can be a relevant source for incremental product innovation ideas if a clear and efficient strategy concerning how to categorise information, participate and integrate consumers is implemented. To some extent, it is possible to utilise all discussion forums, but efficient systematic utilisation requires a company's own discussion forums and participation in them. The results of this article can be employed to create guidelines and as a way, by forward thinking businesses, to connect consumers and product innovation.

4.4 Article 4: Man, this frustrates me: Evolution of consumer emotions in online discussions

The results reported in article 4 (A4) show that emotions are prevalent and openly expressed in online discussions. Although the discussions are typically neutral with participants asking for help and answering each other's questions, the discussions can take a rather quick emotional turn with each comment further fuelling the prevalent emotion.

In previous research, emotions have typically been divided into four positive (i.e. affection, contentment, happiness and pride) and four negative (i.e. anger, fear, sadness and guilt) emotions (Brebner 2003; Eid & Diener 2001; Laros & Steenkamp 2005). Similarly, the same categorisation is employed in this study. However, during the analysis process, an additional category was added as expressions of frustration were notable in the data. Although not included in the widely employed typology of eight emotions, as a separate emotion, frustration is considered a highly negative emotion in consumer behaviour (Tuzovic 2009, 455).

In this study, the ten longest discussions from Suunto's discussion forums were first imported to the NVivo-program and expressions showing any of the nine emotions categorised separately. In addition, the discussions were also divided comment by comment to determine how the discussions proceed: what emotion each comment show and with what intensity.

Most of the comments in the discussions are neutral. Among the themes, especially training results and their accuracy are very enthusiastically discussed, although in a very neutral manner. The participants are trying to solve a challenge and, although some error rates caused frustration, the tone of the discussion remains , if not positive, at least neutral.

This study shows how the prime emotion changes and how emotions spread from consumer to consumer. In the studied discussions, anger is the most prevalent emotion. Negative emotions expressed in online contexts have received only limited attention to date (Grégoire et al. 2009, 18); in addition, there is a need to study their outcomes (Tuzovic 2010, 455). Therefore, this study adds knowledge to the extant literature. Anger primarily relates to the discussed product and its functioning. However, as the company fails to answer consumers' complaints, the discussion takes a very negative turn against the focal company. This finding adds to the previous studies in which the change from one emotion to another and also between individuals, but not the change from a product towards a company, have been studied (e.g. Filipowicz et al. 2011). Additionally, the postings at this point are significantly angrier than the earlier anger expressed in relation to the product; possible calming or positive comments no longer have any effect on the tone of the dis-

cussion. Frustration is most typically caused by error rates in training and also by connection and software problems. Frustration causes equally negative discussions as anger, although the discussions remain at a more polite level and the postings are addressed at other participants, not the company. While constant error rates cause frustration, the participants really like their heart rate monitors and try to solve the problem to enable them to train as efficiently as possible.

Although there are occasionally a couple of consecutive comments showing positive emotions, totally positive discussions do not exist. Of the positive emotions, affection is expressed rather mildly compared to happiness, in relation to which stronger comments are typical. Happiness is typically linked with training results and the product use in training, whereas affection relates to the products or the company, and contentment to the products and other participants.

Emotions have been studied in some online environments (Brebner, 2003; Coffey & Woolworth, 2004; Kwortnik & Ross 2007); however, the previous research lacked knowledge on how emotions are expressed and shared in social media applications such as blogs and discussion forums (Chea & Luo 2008, 29). The results of this study demonstrate that participants in discussion forums openly show both their negative and positive emotions. Anger is the most prevalent emotion, followed by frustration, contentment, happiness and affection, each of which having a similar share of comments. There are no comments showing either shame or pride in the discussions. Furthermore, fear and sadness are shown only in a couple of comments.

To find relevant product improvement ideas in discussion forums, understanding consumer complaint behaviour is essential (Chea & Luo 2008, 46). Based on the results of this study, it can be concluded that it is important for companies to read their company maintained discussion forums regularly and to react quickly to negative comments. One angry comment leads to another and, if not stopped quickly, the whole discussion becomes very negative, thus stopping a potentially promising discussion on innovation. As noted in this study, company unresponsiveness fuels negative emotions the most. Therefore, the correct timing of company intervention is crucial. However, it is not only the speed of intervention that is important, the content of the answers also needs to be properly planned as they will remain in discussion forums for anyone to see. As negative emotions are found in this study to be stronger and more abundant than those that are positive and there are differences between the emotions of anger and frustration, it is recommended that frustration receives particular attention in studying consumers' emotions.

Previous studies on emotions shown in online environments have concentrated on consumer satisfaction (Füller et al. 2009), consumer motivation

(Bartl 2006) and process satisfaction (Franke & Piller 2004). There is a need to consider emotion in relation to innovation creation and success (Wood & Moreau 2006, 54), as they are closely related to the consumer experience (Phillips & Baumgartner 2002). The results of this study support previous results indicating that it is important to understand the collective effects within discussions in forums due to their anonymity and the potential to contact large audiences simultaneously (Chmiel et al. 2011). This article also adds understanding on negative emotions and their effects on discussions and, thus, on company and product image. Furthermore, the study indicates that, when considering innovation possibilities, emotions evoked by the company and its current products should also be addressed.

5 CONTRIBUTIONS AND EVALUATION

5.1 Theoretical contribution

This study contributes to the virtual product innovation discussion, which is relatively new as it was largely fuelled by the new emerging technologies relating to different social media applications. This study is based on the literature relating to consumer integration, virtual idea creation, creating consumer value and prevalence of emotions in online discussions. Table 12 presents the main theoretical contribution of the study in relation to the extant literature.

Table 12 Theoretical contribution of the study

Research question	Main findings in the previous literature	New findings
To what extent do discussion forums contain possible ideas for incremental product innovation?	Online co-creation communities can be employed for idea generation (Herstatt & Sander 2004a; Pitta & Fowler 2005; Bartl 2006; Füller & Matzler 2007; Jawecki et al. 2009; Füller 2010; Gebauer et al. 2012).	Online communities contain both product innovation ideas and consumers eager to participate. This is the reality also in communities not aimed at innovation or maintained by companies.
What would be the potential of discussion forums in creating consumer value?	Co-creation innovative communities have potential for value creation (Füller & Matzler, 2008). Open innovation is important in product innovation (e.g. Seybold, 2006; Ulwick 2005, von Hippel 2005).	Consumer value attributes exist among unselected participants in forums open to anyone. Closed forums established for innovation purposes are more beneficial than general forums open to anyone on the Internet.
How should consumers be integrated into idea generation for the company to determine unmet consumer needs?	Company maintained online methods such as idea competitions (Soll 2006) and toolkits (Bartl 2006) have been successful experiments. Sports enthusiasts and lead users are the most desired innovators (Hestatt et al. 2003; Jeppesen & Frederiksen 2006; Lettl 2007; von Hippel 1986).	Online forums can be utilised in product innovation without any company intervention, although not very efficiently. Either a closed forum established for innovation purposes with both company representatives and consumers interacting or a forum with a product innovation evangelist directing the discussions are promising methods for consumer integration. Sports enthusiasts and lead users are very experienced and active in discussions, although it needs to be checked that they represent the correct target groups and do not have overly specific needs.
How do consumer emotions towards an innovation evolve along the online discussion?	Categorisation of basic consumer emotions has worked well in online studies (Laros & Steenkamp 2005). One emotion turning to another and the contagion of emotion from one individual to another are typical (Filipowich et al. 2011). It is crucial for a company to react quickly to negative postings online (Chea & Luo 2008).	Although the categorisation of basic consumer emotions (Laros & Steenkamp 2005) works well with online data, also "frustration" might be considered a discrete emotion. The target of emotion changes quickly. It is important not only to handle consumer complaints but also rapidly address problems that evoke negative emotions.

Virtual product innovation has certainly raised interest among researchers, engendering different experiments. Online communities have been studied by

Herstatt & Sander (2004a), Pitta and Fowler (2005), Bartl (2006), Füller & Matzler (2007), Jawecki et al. (2009), Füller (2010), Gebauer et al. (2012), thus forming the closest link to this study. In these studies, however, the communities were co-creation communities with chosen participants and the forums were designated purely for that purpose. These idea generation communities have been established and are maintained solely for that purpose. In this study, forums open to anyone on the Internet were studied. Six of these forums were general discussion forums, in which all desired themes were discussed, whereas 22 forums were established and maintained by Suunto. Suunto's discussion forums were originally aimed at information sharing and to be a new kind of "frequently asked questions" board. They were read occasionally, mainly to see consumer feedback, but they were in no sense considered important for innovation purposes.

This study supports the findings of previous research by showing that discussion forums contain both product innovation ideas and consumers eager to participate. Although the communities examined in this study were not aimed at innovation, but for information sharing and conversation, this characteristic still existed.

Soll (2006) studied online idea competitions as a way to find promising new product ideas, whereas Bartl (2006) concentrated on different toolkits to further develop previously stated ideas. These approaches and also creating and maintaining online communities, as previously mentioned, already require activity and involvement from the company. Today, many companies voice the idea of occasionally utilising discussion forums on the Internet, almost without any effort and free of charge, but face reality when realising the amount of material and its unstructured character. The purpose of this study is to analyse how discussion forums can be employed for incremental idea generation. Discussions were observed in this study without any intervention from the researcher or the company. Thus, this study fills a gap in the theoretical discussion relating to virtual product innovation.

In this study, it was noted that consumers with the most ideas and constructive comments were those with the most knowledge and user experience relating to the product in question. They were also those who showed high motivation in getting the most out of their equipment. Furthermore, in case there were some functional problems or inadequacies, their main interest was aimed at solving the challenge, typically with a positive attitude. Often, they even complemented their postings with charts, figures and technical details and by offering solutions to others or even new creative ways to improve the situation. Based on the study, it can be concluded that ideas for incremental product improvements exist in discussion forums, even without active company intervention.

This research focuses on the use of social media discussion forums in incremental product innovation. It concentrates both on value creation in conjunction with consumers and consumer integration into the idea development stage of the whole product innovation process. Idea generation, as the preliminary stage of the product innovation process, has been chosen to be the main interest of this study as it was assumed, and later confirmed during the research, that ideas are indeed abundant in discussion forums. The early stages of the product innovation process has been studied less than the later stages; therefore, this study also contributes to the practice.

As suggested in the theoretical framework (figure 6), the nature of social media discussion forums creates new possibilities and also challenges for companies. Successful companies can easily reach and interact with the masses at a rapid speed and determine consumer preferences and new market trends. By only establishing an Internet connection, consumers can participate whenever and wherever they wish as there are no restrictions to location and time and no expensive costs. In addition to the technological ease of use, social trends promote the use of discussion forums and social media in general. In the empirical study, a fourth influencer on the background was noted: in the discussions, participants often compared products to competing products, either presenting them to others as alternatives or threatening to change to them when displeased with Suunto's products or the company's responses to their requests or questions. Therefore, a fourth influencer "competing products" has been added to the social media block in the modified theoretical framework (figure 9).

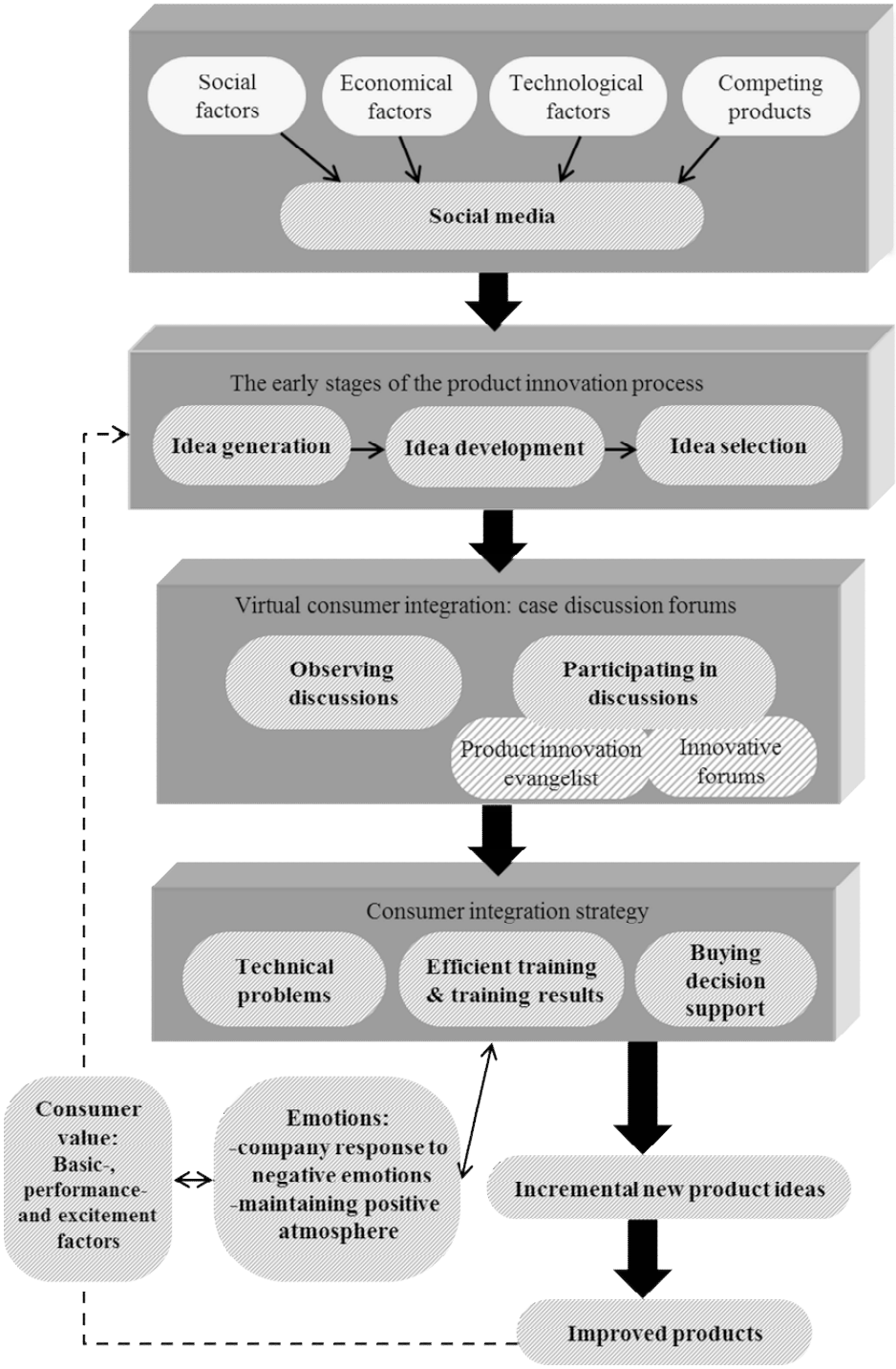

Figure 9 Modified framework of the study

The next block in the framework presents the early stages of the product innovation process. The importance of the idea generation phase, which is the interest of this study, has been recognised in previous studies (e.g. Hauser et al. 2006; Riedel & Schraps 2010; Urban & Hauser 1993b; Wahren 2004). When reading and analysing the discussion forums in this study it became obvious that the discussions contain a lot of information concerning consumer wishes and feedback on the product performance. The abundance of information, however, causes a serious challenge for companies: how to find the correct "pearls" among the unnecessary comments. Nevertheless, if the interest is only in idea generation, discussion forums provide an ideal platform for them. As argued by Wahren (2004, 99), it is first necessary to generate as many ideas as possible or, by Urban & Hauser (1993b, 126), to create very different ideas. For this purpose, discussion forums are ideal and even passive observation methods are suitable.

By only observing the discussions, even occasionally, companies most likely miss many promising ideas, with those that are found simply being very "raw" mentioned wishes without further comments or clarifications. The crucial aim is to find the correct consumers, those who form the appropriate target group. It is, indeed, easy to distinguish the most active and innovative-minded consumers in the discussion, those with passion to innovate who are eager to share their experiences to develop improved products. These, in this case sports enthusiasts, also termed lead users in the literature, are usually willing to share their expertise and help others and also to contribute to the discussion; however, it needs to be decided whether these participants represent the correct target group in relation to each product. In some cases, it could be seen in the discussions that their needs were very special, not related to the wishes of a "normal" consumer but to those of an extreme sportsperson. This it its turn supports the findings of previous studies relating to lead users (e.g. Herstatt et al. 2003; Jeppesen & Frederiksen 2006; Lettl 2007, von Hippel 1986).

Although open innovation has been popular among researchers (Piller 2006; Seybold 2006; Ulwick 2005; von Hippel 2005), the empirical findings in this study emphasise the benefits of a closed innovative community for a company. The discussion forums, open to anyone, seem to collect extreme opinions and, at least, definitely a very large amount of unnecessary information. These extreme opinions contain neutral, positive and negative emotions, of which those that are negative dominate and are generally stronger than positive emotions. As negative emotions are stronger in this study and more abundant than those that are positive and also because there are differences between the emotions of anger and frustration, we recommend that frustration be paid particular attention in studying emotion among consumers. Thus, the variety

of negative emotions could be better described. Expressed emotions, especially negative emotions, effectively stop any innovative discussion.

Although emotions are first targeted to the product and its performance, they rather quickly take a turn towards the whole company. This study contributes to previous studies (e.g. Filipowicz et al. 2011) in which the change from one emotion to another and also the contagion of emotions from one person to another have been studied. Furthermore, the findings demonstrate that it is crucial for a company to show interest in consumer complaints and react quickly to negative postings online. In turn, this confirms the previous studies' findings (Chea & Luo 2008; Chebat et al. 2005).

5.2 Managerial implications

A practical implication of this study, from a company's perspective, is the finding that idea generation in discussion forums does not have to be overly difficult. Most likely in closed innovative forums, it is certainly possible, with a consumer integration plan and time investment, to find promising product innovation ideas, to integrate the best innovators and create value together. The key issues seem to be willingness to participate and also investing time and resources to efficient planning. Another alternative is to find product innovation evangelists to help consumers further develop promising ideas. In so doing, the evangelists need to be provided with some tools and instructions on what to aim at and how to act.

Many companies have voiced the idea of "occasionally checking discussion forums to find brilliant ideas" free of charge, thus having no need to establish and maintain their own forums. One of the central contributions of this study is, however, the realisation that such attempts are not possible. First, reading the discussions is not efficient and, second, the level of discussions in general discussion forums on any topic is not sufficiently high and detailed to determine promising ideas. It is thus not possible to reap the rewards without any investment.

A key to success is to integrate the consumers and maintain their interest in a product and its improvements. There is an abundance of suitable participants in the discussions who are certainly interested in the products in question and possess an extensive knowledge on them and their usage. With an open approach and invitation to product innovation forums, the problems of confidentiality and protection of interest are also solved.

Generally, company owned discussion forums are technically easy to build and maintain. However, the problem lies not in building and maintaining discussion forums, but with the ability to participate. Without supervision,

discussions tend to easily turn towards negativity, especially if something is found annoying or upsetting. It does not need to be much, just an incorrectly formulated message to one participant that is then posted for thousands of others to see or the inability to answer a question sufficiently quickly or precisely. Maintaining discussion forums without a purpose does not seem to make sense; however, it is typical. The reality is that social media is a very efficient channel for spreading both positive and negative messages concerning a company. Therefore, if a discussion forum is built, it is highly recommended to consider its purpose and the strategy for company interaction before the forum is opened to consumers. If consumers find the company intervention inadequate, negative rumours will very quickly spread through Internet declaring the company's disinterested attitude, which will cause both anger and frustration.

The challenge of further developing promising ideas leads to the third block in the modified theoretical framework. Simply observing discussions is an easy option, although it will not bring the best results. To enable selection and evaluation of the generated ideas with consumers, the company needs to actively participate in the discussions, hire a product innovation evangelist, defined in this study, or create a closed forum for the best innovators in the discussions. If the discussion remains at a rather general level, it is possible to utilise forums, open to everyone; however, closed access to a protected environment is necessary to gain more promising results. Discussion forums are a very good resource with which to find the correct participants and to preliminarily test their suitability for idea generation purposes: to determine their level of expertise, attitude and ability to originate ideas and also to interact with others.

These innovation-oriented consumers can also be utilised as so-called company evangelists, who subtly direct discussions in the forums, keep the discussion focused on interesting topics until a promising idea has been generated to a concrete level and maintain a positive atmosphere. This, so-called social media evangelist (Dwyer 2007, 76) has been presented earlier in relation to social media marketing, in which their role is to spread positive word-of-mouth among consumers. This study shows that suitable product innovation evangelists are easily recognisable in discussion forums as they typically stop a negative and complaining thread and remind discussants of something positive in relation to the product or service. Often, these individuals are those who possess a high level of expertise and eagerly help other forum members with their problems, show charts and diagrams and are deeply interested in efficient training and accurate results.

A product innovation evangelist would solve the problem of unwanted company intervention in open discussion forums. Although answers are occa-

sionally requested, sometimes even demanded, company interaction is not intrinsically accepted and, as noticed in the empirical part of the study, the attitude towards company representatives is close to hostile. A product innovation evangelist should be a private individual, an outsider like the other participants, and could very well work from the training perspective, offering help and advice for training. Thus, the evangelist would be well received.

It is a challenge to determine ideas that have potential in the eyes of the target consumers, as very little is known on their backgrounds. The nature of the discussions demands at least a person, such as the product innovation evangelist, to direct the discussions. However, if asked to participate in a closed innovative forum, the best innovators will probably wish to participate as they appreciate honest interaction, feel valuable and are, in turn, loyal and eager to offer their expertise for the company to utilise.

Evangelists and closed forums are indeed practical solutions for a company to choose. However, as presented in the fourth block in figure 9 , a systematic plan is needed. As noticed in the empirical part of the study, consumers are interested in discussing technical problems, efficient training and training results and also in seeking support for the buying decision process. Especially, discussions relating to accurate training results and efficient training cause a lot of emotion and show the participants' deep dedication to the matter. Thus, it would thus make sense to utilise this enthusiasm and build the interaction around these themes. Consumers expect continuous interaction and are easily upset or annoyed with company unresponsiveness and unsatisfactory comments. The findings of this study show how one angry or frustrated comment leads to another and, typically, the whole discussion becomes very negative. In turn, without well-timed company intervention, this effectively stops any constructive discussion. As pointed out by Prahalad & Ramaswamy (2004b, 7), high quality interactions that give consumers the opportunity to actively communicate with the company and participate in generating new product improvement ideas, thus creating value to them, are the key to competitive advantage.

Determining unmet consumer needs and incremental product innovation ideas is closely linked with consumer value creation. Lundkvist & Yakhlev (2004, 249) argue that consumers and company professionals are equally important when generating new ideas and selecting those with the most potential for further evaluation. Although the social aspects in social media interaction are important to consumers, it needs to be remembered that the biggest motivating factor is the possibility of improved products (Sawhney et al. 2005, 6). The empirical part of this study crystallises the point that participants are not simply after any product improvements, but those that will directly help them to reach their specific goals; for instance, to run their planned marathon

or triathlon competition faster or to improve their physical fitness. In these cases, the discussants have very little patience or understanding; training results need to be extremely precise and the training the most efficient possible. They have a lot of time and energy to count percentages and draw charts and tables to show and share how their training has improved. In addition, they take their training very seriously, aiming at changing activity classes as soon as possible with the minimum rest. For these purposes, the participants would definitely be willing to engage in innovation activities.

From the consumer perspective, a practical implication of this study is company interest in innovation in conjunction with consumers. Many companies already participate actively in discussion forums and provide ideas and advice on a wide variety of subjects and topics concerning which they are knowledgeable, thus gaining the trust of consumers (Scott 2007, 87). Companies seek valuable consumer insight to enable improvements to their products (Volmer & Precourt 2008, 54) and it is well known by these companies that consumers utilise the Internet to share experiences regarding the latest equipment, exchange ideas for product modification and even develop entirely new concepts (Jawecki et al. 2009, 1).

As discussed in subsection 5.1, for many enthusiastic consumers, the best reward for participating in the innovation process is the possibility of getting improved products. Consumers are especially eager to innovate if the discussion is related to a hobby about which they are passionate; for instance, sports. However, unless consumers are prepared to begin designing and producing the products themselves, they need company professionals to participate. To ensure a result with the most potential, it is best to have both consumers and company professionals equally committed to the process, to generate ideas from the very beginning and not just put forward ready tailored ideas to a company representative. It was found during this study that, from the company perspective, many ideas presented in the forums are already known to the company and therefore of little interest. However, it was also found that there were ideas with potential that, for some reason, the company chose not to pursue. In both cases, close interaction and a different attitude might have promoted a different result.

For an organisation supporting innovations discussion forums, there could be a relevant test laboratory to determine whether an innovative idea has potential in the eyes of both the company and consumers. Here, a moderator or a previously mentioned product innovation evangelist, committed to promoting innovations, might present an idea to the participants. Questions are a well-received form of interaction in forums and participants are generally very eager to help others and share their opinions, especially, if the idea in question is interesting to them. As discussed in subsection 5.1, such themes are those

that help the participants to achieve their goals; for instance, in a form of improved training or more accurate results.

5.3 Evaluation of the study

The evaluation of a qualitative study is not as simple as that of a quantitative study. Also, there are various criteria for evaluation put forward by different researchers; two different researchers with the same data can have different perspectives and reach different conclusions and also perceive connections to the extant literature from a different viewpoint. The qualitative approach is flexible and gives a researcher many choices to present the research (Coffee & Atkinson 1996, 28; Lincoln & Guba 1985, 290). Therefore, the argumentation and explanation of a research process and the results are essential.

Although researchers employ different terms for the evaluation criteria of a study's trustworthiness, the contents seem to be rather similar. Typically, concepts of internal and external validity and also internal and external reliability are covered (e.g. Aaltio & Puusa 2011, 154–156; Goodwin & Goodwin 1984, 413; Parker 1990, 613). Therefore, they have also been employed in this study.

The concept of internal validity is widely recognised in qualitative studies (Tynjälä 1991, 390) and refers to the extent to which conclusions drawn in the research give an accurate description of what occurred (Eriksson & Kovalainen 2008, 292) and the harmony between the theory and the definitions employed in the study (Eskola & Suoranta 1998, 214). Thus, the researcher shows the theoretical knowledge gained in the sphere of the study. In this study, the researcher first familiarised herself with previous studies and the theoretical background. A theoretical framework was also built before beginning the empirical process. Key concepts were defined prior to the empirical study and the research questions formed. Thus, the theoretical background formed a solid basis for the empirical study.

The researcher chose observation for the data gathering method. Observation has the advantage of unobtrusiveness and overcomes any threats to validity emerging from a possible influence that the observer might have on the persons under observation (McKinnon 1988, 47). In this case, the researcher definitely had no influence on their content or the discussion process as the discussions were read after they had been written. However, McKinnon (1988, 47) points out that, in observation from outside, the researcher is forced to work with incomplete data and without the opportunity to ask clarifying questions. Thus, there is a risk of misinterpretation. It would have benefitted this study if the researcher had been able to reach the discussants and ask for their opinions and some clarifying questions. However, the discussion forums were

no longer active at the time of data gathering: they were planned to be closed by the company, were not updated or modified and, thus, were of no further interest to the consumers. As the company had not gathered data on the participants, it was impossible to contact them. However, the researcher asked a company representative and a trainer, hired to answer training-related questions in the forums, complementary questions. Considering the research question, which relates to observing and not participating in the discussion forums, this approach was considered appropriate. Understandably, a larger amount of interviews might have improved the understanding of a company viewpoint.

In addition to internal validity, external validity needs to be evaluated (Tynjälä 1991, 390). External validity refers to the link between the analysis and conclusions drawn during the study and from the data (Eskola & Suoranta 1998, 214); a research is externally valid when it accurately describes the research objective (Grönfors 1982, 174). Therefore, the transparency of the analytical chain is essential (Aaltio & Puusa 2011, 155). The focal company and product are openly revealed in this study, thus making the study more transparent.

Validity concerns the question on whether the researcher is studying the stated research phenomenon (McKinnon 1988, 36) scientifically and showing the knowledge gained in the sphere (Eskola & Suoranta 1998, 214). In addition, validity concerns the wholeness of the phenomenon under research and the transparency of the analytical chain (Aaltio & Puusa 2011, 155), showing both the credibility of the analysis and the relationship between the conclusions and the data (Eskola & Suoranta 1998, 214). In the analysis, special attention was paid to the systematic handling and categorisation of the data. In this study, the phenomenon under research is the potential of discussion forums in idea generation. The aim was to gain deeper understanding, which has also been achieved. However, it has to be noted that different discussion forums, for instance, relating to IT, might have given different answers. Nevertheless, the general principles would have been the same: participants would have been eager to discuss product ideas that would create additional value for them in a form of improved products, and would have included very enthusiastic and experienced participants and also those visiting the forum and just getting started.

In the analysis, special attention was paid to the systematic handling and categorising of data. The data analysis process is described in figure 9 in subsection 5.1. Each step was planned with care and the process defined before analysing the material.

In addition to validity, reliability is an essential part of a study's trustworthiness (Tynjälä 1991, 391). Reliability in qualitative research is concerned with the reciprocity of the research, whether two researchers would come to

similar results and conclusions (Aaltio & Puusa 2011, 156). In addition, data are considered reliable when they do not include controversial samples (Grönfors 1982, 175–176).

In this study, the researcher decided to observe the discussions from outside. This approach overcomes any threats to validity and reliability arising from effects caused by the observer, although there is a risk of misinterpretation due to the researcher's inability to ask questions (McKinnon 1988, 47). The data was there for anyone to see and had been gathered over a long time period; as such, the process was transparent. It has to remembered, however, that the questions of validity and reliability concern the whole research rather than only the empirical aspects (Tynjälä 1991, 390). Another researcher might have chosen a different approach to the phenomenon under research. Although there is a risk for misinterpretation with the pure observation method, as discussed earlier in this chapter, this risk mainly relates to small details. There were no controversies in the data; to a large extent, the different discussion forums, discussions and separate comments produced similar results. There were minor differences between the discussions and the different forums, although the main characteristics were the same. The amount of data was also large and was derived from 2,187 discussions from 28 different discussion forums. This amount of data is considered to have given reliable results.

To increase reliability, Grönfors (1982, 175–176) suggests that data is observed several times. This approach was considered beneficial in this study. The data were read several times. Also, data categorisation was systematically conducted after obtaining a general picture on the characteristics of the data. Due to the large amount of data, its organisation and categorisation was a long process and the researcher returned to the previously organised data several times, which certainly improved the process. Furthermore, the researcher tried to promote confirmability by carefully saving all discussions in both electronic and paper formats, creating detailed Excel tables during each step of the data organisation and analysis process, categorising the data by utilising the NVivo program and including comments from the discussions in the analysis.

In addition, the researcher has reported the research process in detail to enable others to evaluate the process and see how the conclusions were drawn. The discussion forums chosen are listed and also the supporting materials described in subsection 3.2. In this study, the chosen case discussion forums related to heart rate monitors; however, they provide a general understanding on the reality of discussion forums and their role in product innovation.

This subsection describes the trustworthiness, weaknesses and strengths of the study. Most weaknesses are linked with the pure observation method, although the researcher endeavoured to decrease the weaknesses during the research. Considering the research question, observation was a natural choice

for this study and, during the research, identified many interesting ideas for further research, which will be further discussed in the following subsection.

5.4 Future research possibilities

This study raises several new research possibilities that were out of reach within this research. The relative newness of social media research offers many new research possibilities within older and more researched themes in relation to product innovation, consumer integration and value creation process.

The study shows that a comparative study within another sphere is needed to expand the results from sports to another products. The newest technology, currently iPads and iPhones, is another theme that causes a lot of discussion on the Internet. Adding different types of product to the study would make it possible to determine whether they influence the level of interest and ideas mentioned and also change the process and nature of the discussions.

Discussion forums have not been overly studied in general and, thus, there are many aspects to address; for instance, how to maintain and direct discussions without damaging the process between individuals, how to participate in the discussion from a company perspective while, however, considering the required ethics (e.g. no false identities or false messages) and how to ensure confidentiality and trust.

Themes arising directly from this study relate to the product innovation process. As this study only addresses the idea generation stage, it certainly will be necessary to cover, first, the other steps during the early stages of the product innovation process and, second, the whole product innovation process. It would be interesting to study active and currently popular forums, interview the most likely potential innovators for further information, interact with participants in the forums and also to study more closely how the most likely potential innovators might be included in the whole innovation process.

The concept of a product innovation evangelist and its further testing in practice is definitely a theme for a novel future study. Finding a suitable evangelist, creating a work description for him or her in a specific case, and implementing and also analysing the process in practice will be a very interesting new research topic. In this regard, emotions should also be included in future research; for example, how does the participation of a product innovation evangelist affect the expressions of emotions and will the discussions become more positive and efficient for idea generation purposes.

It is proposed in this study that a closed innovative forum would be a more efficient potential source for product innovation ideas. The change from an

open forum to a closed innovation community comprising selected participants will consequently also be of the utmost interest, as will a comparison between an open and closed forum within the same study.

REFERENCES

Aaltio, I. – Puusa, A. (2011) Laadullisen tutkimuksen luotettavuus. In: *Menetelmäviidakon raivaajat*, eds. A. Puusa – P. Juuti, 153–166. Johtamistaidon opisto: Jyväskylä.

Agichtein, E. – Castillo, C. – Donato, D. – Gionis, A. – Mishne, G. (2008) *Finding high-quality content in social media*. In: First ACM Conference on Web Search and Data Mining. Stanford, CA, USA. February 2008, 183–193.

Ahlqvist, T. – Halonen, M. – Heinonen, S. (2008) Weak signals in social media. Report on two workshop experiments in futures monitoring. SOMED foresight report 1, Research report VTT-R-03466-07.

Alasuutari, P. (2011) *Laadullinen tutkimus*. Vastapaino: Tampere.

Amabile, T. (1998) How to kill creativity. *Harvard Business Review*, Vol. 9 (5), 77–87.

Amabile, T. (1996) *Creativity in context*. Westview Press Inc.: Boulder, United States.

Amabile, T. – Conti, R. – Coon, H. – Lazenby, J. – Herron, M. (1996) Assessing the work environment for creativity. *The Academy of Management Journal*, Vol. 39 (5), 1154–1184.

Anderson, J. C. – Jain, D. C. – Chintagunta, P. K. (1993) Customer value assessment in business markets: A state-of-practice study. *Journal of Business to Business Marketing*, Vol. 1 (1), 3–30.

Antikainen, M. (2007) *The Attraction of Company Online Communities*. Acta Universitatis Tamperensis 1209. Tampere University: Tampere

Antola, K. (2009) *Customer-supplier integration in the forest industry*. Turku School of Economics: Turku.

Arbnor, I. – Bjerke, B. (1997) *Methodology for creating business knowledge*. Second edition. Sage Publications: London.

Aurinkomatkat blogi (2013) Sinustako Aurinkomatkojen matkatestaaja? http://www.aurinkomatkat.fi/uutiset/13-04-2012/sinustako-aurinkomatkojen-matkatestaaja-2013>, retrieved 15.8.2013.

Balderjahn, I. – Schnurrenberger, B. (2005) Virtuelle Kundenintegration im Innovationsprozess, 1–5. <http://www.bs-consult.de/download/VKIuInnovation-probe.pdf>, retrieved 22.9.2009.

Bartl, M. (2006) *Virtuelle Kundenintegration in die Neuproduktentwicklung*. Deutscher Universitäts Verlag: Wiesbaden.

Bartl, M. – Ernst, H. – Füller, J. (2004) Community Based Innovation – eine Methode zur Einbindung von Online Communities in den Innovationsprozess. In: *Produktentwicklung mit virtuellen Communities. Kundenwünsche erfahren und Innovationen realisieren*, eds. C. Herstatt – J. G. Sander, 141–168. Gabler Verlag: Wiesbaden.

Bazeley, P. (2007) *Qualitative data analysis with NVivo*. Sage Publications Ltd.: London.

Berg, B. L. (2004) *Qualitative research methods for the social sciences.* Fifth edition. Pearson: London.

Berg, B. L. – Lune, H. (2012) *Qualitative research methods for the social sciences*. Eight edition. Pearson Education Inc.: New Jersey.

Bley, S. (2010) Innovationswettbewerb und open innovation. In: *Die frühe Innovationsphase: Methoden und Strategien für die Vorentwicklung*, eds. C. Gundlach – A. Glanz – J. Gutsche, 299 – 326. Symposion Publishing Gmb: Düsseldorf.

Boeddrich, H-J. (2010) Die frühe Phase im Innovationsprozess. In: *Die frühe Innovationsphase: Methoden und Strategien für die Vorentwicklung*, eds. C. Gundlach – A. Glanz – J. Gutsche, 135–158. Symposion Publishing GmbH: Düsseldorf.

Bowler Jr., G. M. (2010) Netnography: A method specifically designed to study cultures and communities online. *The Qualitative Report*, Vol. 15 (7), 1270–1285.

Bragg, A. – Bragg, M. (2005) *Developing new business ideas, A step-by-step guide to creating new business ideas worth backing*. Prentice Hall: London.

Brannen, J. (2005) Mixing methods: the entry of qualitative and quantitative approaches into the research process. *International Journal of Social Research Methodology*, Vol. 8 (3), 173–184.

Brebner, J. (2003) Gender and emotions. *Personality and Individual Differences*, Vol. 34 (3), 387–394.

Brockhoff, K. (1985) Abstimmungsprobleme von Marketing und Technologiepolitik. *Die Betriebswirtschaft*, Vol. 45 (6), 623–632.

Brown, J. – Broderick, A. J. – Lee, N. (2007) Word of mouth communication within online communities: conceptualizing the online social network. *Journal of Interactive Marketing*, Vol. 21 (3), 2–20.

Butz Jr., H. R. – Goodstein, L. D. (1996) Measuring customer value: Gaining the strategic advantage. *Organizational Dynamics*, Vol. 24 (3), 63–77.

Cagan, J. – Vogel, C. M. (2002) *Creating breakthrough products. Innovation from product planning to program approval*. Pearson Education Ltd.: New York.

Carbonell, P. – Rodriguez-Escudero, A. – Pujan, D. (2009) Consumer involvement in new product development. An Examination of Antecedents and Outcomes. *Journal of Product Innovation Management*, Vol. 26 (5), 536–550.

Carlson, C. R. – Wilmot, W. W. (2006) *Innovation: the five disciplines for creating what customers want*. Random House Inc.: New York.

Cavanagh, S. (1997) Content analysis: concepts, methods and applications. *Nurse Researcher*, Vol. 4 (3), 5–16

Cateora, G. (2007) *International marketing*, 13th edition. McGraw Hill: London.

Chea, S. – Luo, M. M. (2008) Post-adoption behaviors of e-service customers: The interplay of cognition and emotion. *International Journal of Electronic Commerce*, Vol. 12 (3), 29–56.

Chebat, J-C. – Davidow, M. – Codjovi, I. (2003) Silent Voices: Why Some Dissatisfied Consumers Fail to Complain. *Journal of Service Research*, Vol. 7 (4), 328–342.

Chesbrough, H. (2003) *Open innovation*. Harvard Business School Publishing Corporation: Massachusetts.

Chmiel, A. – Sienkewicz, J. – Thelwall M. – Paltoglou, G. – Buckley, K. – Kappas, A. – Holyst, J. A. (2011) Collective emotions online and their influence on community life. *PLos ONE*, Vol. 6 (6), 1–8.

Coffee, A. – Atkinson, P. (1996) *Making sense of qualitative data. Complementary research strategies*. Sage Publications Ltd.: London.

Coffey, B. – Woolworth, S. (2004) Destroy the scum, and then neuter their families: the web forum as a vehicle for community discourse?" *The Social Science Journal*, Vol. 41 (1), 1–14.

Cong, G. – Wang, L. – Lin, C-Y. – Song, Y-I. – Sun, Y. (2001) Finding question-answer pairs in online forums. In: *Proceedings of the 24th SIGIR Conference on Research and Development in Information Retrieval*, Singapore, July, 1–8.

Cooper, R. G. (1994) New products: the factors that drive success. *International Marketing Review*, Vol. 11 (1), 60–76.

Cooper, R. G. (1990) Stage-gate systems: a new tool for managing new products. *Business Horizons*, Vol. 33 (3), 44–54.

Cooper, R. G. – Kleinschmidt, E. J. (1995) Performance typologies of new product projects. *Industrial Marketing Management*, Vol. 24 (5), 439–456.

Cooper, R. G. – Kleinschmidt, E. J. (1986) An investigation into the new product process: steps, deficiencies and impact. *Journal of Product Innovation Management*, Vol. 3 (2), 71–85.

Cothrel, J. (2000) Measuring the success of an online community. *Strategy and Leadership*, Vol. 8 (2), 17–21.

Cyber Alert (2013) <http://www.cyberalert.com/blogmonitoring.html>, retrieved 20.8.2013.

Dabbs Jr., J. M. (1982) Making things visible. In: *Varieties of qualitative research*, ed. by Van Maanen, J., 31–66. Sage Publishing Ltd.: Beverly Hills.

Daecke, J. (2009) *Nutzung virtualler Welten zur Kundenintegration in die Neuproduktentwicklung. Eine explorative Untersuchung am Beispiel der Automobilindustrie*. Gabler GmbH: Wiesbaden.

Dahan, E. – Hauser, J. R. (2002) The virtual customer. *Journal of Product Innovation Management*, Vol. 19 (5), 332–353.

Dahan, E. – Hauser, J. R. (2001) Product development – managing a dispersed process. <http://scholar.google.fi/scholar?hl=fi&q=Product+development+%E2%80%93+managing+a+dispersed+process+2001& as_ylo=&as_vis=0>, retrieved 12.12.2009.

Dahlander, L. – Frederiksen, L. – Rullani, F: (2008) Online communities and open innovation: Governance and Symbolic Value Creation. Industry and Innovation, Vol. 15 (2), 115–123

De Mooij, M. – Kortesmäki, T. – Lammi, M. – Lautamäki, S. – Pekkala, J. – Sinkkonen, I. (2005) *Kompassina asiakas: näkemyksiä ja kokemuksia käyttäjälähtöisyydestä*. Teknologiateollisuus ry: Helsinki.

Demopoulos, T. (2007) *What no-one ever tells about blogging and podcasting*. Kaplan Publishing: Chicago.

Denzin, N. K. – Lincoln, Y. S. (2000) Introduction: The discipline and practice of qualitative research. In: *Handbook of qualitative studies, second edition*, eds. N. K. Kenzin – Y. S. Lincoln, 1–29. Sage Publications: London.

De Valck, K. (2005) Virtual communities of consumption. Networks of consumer knowledge and companionship. PhD Series Research in Management: Rotterdam.

Dwyer, P. (2007) Measuring the value of electronic word of mouth and its impact in consumer communities. *Journal of Interactive Marketing*, Vol. 21 (2), 63–79.

Eid, M. – Diener, E. (2001) Norms for expressing emotions in different cultures: Inter- and intranational differences. *Journal of Personality and Social Psychology*, Vol. 81 (5), 869–885.

Elo, S. – Kyngäs, H. (2008) The qualitative content analysis process. *Journal of Advanced Nursing*, Vol. 62 (1), 107–115.

Eriksson, P. – Kovalainen, A. (2008) *Qualitative methods in business research*. Sage Publications Ltd.: London.

Ernst, H. (2004) *Virtual consumer integration – maximizing the impact of consumer integration on new product performance. Cross-functional Innovation Management*. Albers & Sohns: Wiesbaden.

Ernst, H. – Soll, J. H. – Spann, M. (2004) Möglichkeiten der Lead-User-Identifikation in Online-Medien. In: *Produktentwicklung mit virtuellen Communities. Kundenwünsche erfahren und Innovationen realisieren*, eds. C. Herstatt – J. G. Sander, 121–140. Gabler Verlag: Wiesbaden.

Eskola, J. – Suoranta, J. (1998) *Johdatus laadulliseen tutkimukseen*. Gummerus Oy: Jyväskylä.

Éthier, J. – Hadaya, P. – Talbot, J. – Cadieux, J. (2006) B2C web site quality and emotions during online shopping episodes: An empirical study. *Innovation & Management*, Vol. 43 (5), 627–639.

Ettlie, J. H. – Reza, E. M. (1992) Organisational integration and process innovation. *The Academy of Management Journal*, Vol. 35 (4), 795–827.

Evans, D. (2008) *Social media marketing: an hour a day*. Wiley Publishing Inc.: Indianapolis.

Fagerberg, J. (2005) Innovation: a guide to the literature. In: *The Oxford Handbook of Innovation*. Oxford University Press: Oxford.

Fichter, K. (2005) *Modelle der Nutzerintegration in den Innovationsprozess. Mäglichkeiten und Grenzen der Integration von Verbrauchern in Innovationsprozesse für Nachhaltige Produkte und Produktnutzungen in der Internetökonomie*. Institut für Zukunftsstudien und Technologiebewertung: Berlin.

Filipowicz, A. – Barsade, S. – Melwani, S. (2011) Understanding emotional transitions: The interpersonal consequences of changing emotions in negotiations. *Journal of Personality and Social Psychology*, Vol. 101 (3), 541–556.

Finnairin blogi (2013) Asiakkaat mukana tuotekehityksessä. <http://blogit.finnair.fi/2011/06/16/asiakkaat-tuotekehityksessa/>, retrieved 20.8.2013.

Franke, N. – Piller, F. (2004) Value creation by toolkits for user innovation and design: the case of the Watch market. *The Journal of Product Innovation Management*, Vol. 21 (6), 401–415.

Franke, N. – Shah, S. (2001) How communities support innovative activities: an exploration of assistance and sharing among innovative users of sporting equipment. Sloan Working Paper. Munich. <http://flosshub.org/16>, retrieved 10.11.2011.

Franke, N. – von Hippel, E. – Schreier, M. (2006) Finding commercially attractive user innovations: a test of lead-user theory. *Journal of Product Innovation Management*, Vol. 23 (4), 301–315.

Franz, R. – Wolkinger, T. (2003) Consumer integration with virtual communities. Case study: the online community of the largest regional newspaper in Austria. In: *Proceedings of the 36th Hawaií International Conference on System Sciences*, January 6–9, 1–9.

Füller, J. (2010) Refining virtual co-creation from a consumer perspective. *California Management Review*, Vol. 52 (2), 98–122.

Füller, J. (2006) Why consumers engage in virtual new product developments initiated by producers. *Advances in Consumer Research*, Vol. 33 (5), 639–646.

Füller, J. – Bartl, M. – Ernst, H. – Mühlbacher, H. (2006) Community based innovation: how to integrate members of virtual communities into new product development. *Electronic Commerce Research*, Vol. 6 (1), 57–73.

Füller, J. – Bartl, M. – Ernst, H. – Mühlbacher, H. (2004) Community based innovation. A method to utilize the innovative potential of online communities. In: *Proceedings of the 37th Hawaii International Conference on System Sciences*, 5–8 January, 1–24.

Füller, J. – Jawecki, G. – Mühlbacher, H. (2007) Innovation creation by online basketball communities. *Journal of Business Research*, Vol. 60 (1), 60–71.

Füller, J. – Matzler, K. (2008) Customer delight and market segmentation: An application of the three-factor theory of customer satisfaction of life-style groups. *Tourism Management*, Vol. 29 (1), 116–126.

Füller, J. – Matzler, K. (2007) Virtual product experience and consumer participation – a chance for consumer-centred, really new products. *Technovation*, Vol. 27 (6–7), 378–387.

Füller, J. – Mühlbacher, H. – Matzler, K. – Jawecki, G. (2009) Consumer empowerment through Internet-based co-creation. *Journal of Management Information Systems*, Vol. 26 (3), 71–102.

Gale, B. T. (1994) *Managing Customer Value*. Free Press: New York.

Gassmann, O. – Kausch, C. – Enkel, E. (2005) *Integrating consumer knowledge in the early innovation phase*. <http://scholar.google.fi/scholar?hl=fi&q=Integrating+consumer+knowledge+in+the+early+innovation+phase.&btnG=Haku&as_ylo=&as_vis=0>, retrieved 11.1.2010.

Gassmann, O. – Wecht, C. H. (2005) *Early consumer integration into the innovation process*. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.121.3035&rep=rep1&type=pdf>, retrieved 20.2.2010.

Gebauer, J. – Füller, J. – Pezzei, R. (2012) The dark and the bright side of co-creation: Triggers of member behavior in online innovation communities. *Journal of Business Research*, Vol. 66 (9), 1516–1527.

Gerybadze, A. (2003) Gruppendynamik und Verstehen in Innovation Communities. In: *Management der Frühen Innovationsphasen*, eds. C. Herstatt – B. Verworn, 145–160. Gabler Verlag: Wiesbaden.

Ghauri, P. – Gronhaugh, K. (2005) *Research methods in business studies: A practical guide*. Prentice Hall: London.

Goodwin, L. D. – Goodwin, W. L. (1984) Are validity and reliability "relevant" in qualitative evaluation research? *Evaluation & the Health Professions*, Vol. 7 (4), 413–426.

Grass, T. (2009) *Kundenintegration im Innovationsprozess. Identifikation von Problemfeldern in IT-Unternehmen anhand von Fallstudienanalysen*. Technischer Universität Dortmund: Dortmund.

Grégoire, Y. – Tripp, T. M. – Legoux, R. (2009) When customer love turns into lasting hate: The effects of relationship strength and time on customer revenge and avoidance. *Journal of Marketing*, Vol. 7 (6), 18–32.

Grönfors, M. (1982) *Kvalitatiiviset kenttätyömenetelmät*. WSOY: Helsinki.

Grüner, K. E. – Homburg, C. (2000) Does consumer interaction enhance new product success? *Journal of Business Research*, Vol. 49 (1), 1–14.

Guchait, P. – Namasivayam, K. (2012) Customer reaction of service products: role of frustration in customer evaluations. *Journal of Services Marketing*, Vol. 26 (3), 216–224.

Hagel III, J. – Armstrong, A. G. (1997) *Net Gain: Profit im Netz*. Falken Verlag: Niedernhausen.

Hakala, U. (2003) Quantitative and qualitative methods of analyzing advertising: Content analysis and semiotics. *Series Discussion and Working Papers 5:2003*. Publications of the Turku School of Economics and Business Administration: Turku.

Hakala, S. – Vesa, J. (2013) Verkkokeskustelut ja sisällön erittely. In: *Otteita verkosta: verkon ja sosiaalisen median tutkimusmenetelmät*, eds. S-M. Laaksonen — J. Matikainen – M. Tikka, 216–244. Vastapaino: Tampere.

Hänninen, S. (2007) The "perfect technology syndrome": sources, consequences and solutions. *International Journal of Technology Management*, Vol. 39 (½), 20–32.

Hauser, J. – Tellis, G. J. – Griffin, A. (2006) Research on innovation: a review and agenda for marketing science. *Marketing*, Vol. 25 (6), 687–717.

Hayenga, O-H. (1997) *Innovationscooperation zwischen Hersteller und Anwender*. Diplomarbeiten Agentur: Hamburg.

Heiskanen, E. – Lovio, R. (2007) User knowledge in housing energy innovations. In: *Proceedings of the Nordic Consumer Policy Research Conference*, 3.–5.October, 1–20.

Hemetsberger, A. – Reinhardt, C. (2004) Sharing and Creating Knowledge in Open-Source Communities. The case of KDE. *Abstract for The Fifth European Conference on Organizational Knowledge, Learning, and Capabilities*, 2–4. April, Innsbruck, Austria. http://ifipwg213.org/system/files/hemreinh.pdf, retrieved 2.11.2010.

Henkel, J. – Sander, J. G. (2003) Identifikation innovativer Nutzer in virtuellen Communities. In: *Management der frühen Innovationsphasen*, eds. C. Herstatt – B. Verworn, 73–102. Gabler Verlag: Wiesbaden.

Herstatt, C. (1991) *Anwender als Quellen für die Produktinnovation*. ADAG: Zürich.

Herstatt, C. – Lüthje, C. – Lettl, C. (2003) Fortschrittliche Kunden zu Breakthrough-Innovationen Stimulieren. In: *Management der frühen Innovationsphasen*, eds. C. Herstatt – B. Verworn, 57–72. Gabler Verlag: Wiesbaden.

Herstatt, C. – Sander, J. (2004a) Einführung: virtuelle Communities. In: *Produktentwicklung mit virtuellen Communities. Kundenwünsche erfahren und Innovationen realisieren*, eds. C. Herstatt – J. G. Sander, 1–16. Gabler Verlag: Wiesbaden.

Herstatt, C. – Sander, J. (2004b) Online Kundeneinbindung in den frühen Innovationsphasen. In: *Produktentwicklung mit virtuellen Communities. Kundenwünsche erfahren und Innovationen realisieren,* eds. C. Herstatt – J. G. Sander, 141–168. Gabler Verlag: Wiesbaden.

Herstatt, C. – Verworn, B. (2003) Bedeutung und Charakteristica der frühen Phasen des Innovationsprozesses. In: *Management der frühen Innovationsphasen*, eds. C. Herstatt – B. Verworn, 3–18. Gabler Verlag: Wiesbaden.

Hienerth, C. – Lettl, C. (2011) Exploring how peer communities enable lead-user innovations to become standard equipment in the industry: Community pull effects. *Journal of Product Innovation Management*, Vol. 28 (1), 175–195.

Hilzenbecher, U. (2005) Innovategy. In: *Erfolgsfaktor Innovation*, ed. R. Berndt, 47–70. Springer Verlag: Berlin.

Hintikka, K. (2007) *Web 2.0 – johdatus Internetin uusiin liiketoimintamahdollisuuksiin*. TIEKE Tietoyhteiskunnan kehittämiskeskus OY: Helsinki.

Hoffmann, E. (2007) Consumer integration in sustainable product development. *Business Strategy and the Environment*, Vol. 16 (5), 332–338.

Hoffmann, E. (2006) *Participatory development of climate-friendly products*. <http://www.onniblogi.net/wp-content/hoffmann.pdf>, retrieved 26.2.2010

Hoffmann, E. – Konrad, W. (2007) *Konsument/innen- und Unternehmenslernen durch Nutzer/innenintegration in die Produktentwicklung. Materialien der wissenschaftlichen Begleitforschung der INNO-COPE-Verfahrens zur kooperativen Entwicklung eines Pedelec*. Institut für ökölogische Wirstschaftsforschung: Berlin.

Holbrook, M. B. (1999) *Consumer value: A framework for analysis and research*. Routledge: London.

Hoonsopon, D. – Tuenrom, G. (2009) The empirical study of the impact of product innovation factors on the performance of new products: radical and incremental product innovation. *The Business Review Cambridge*, Vol. 12 (2), 155–162.

Howe, J. (2008) *Crowdsoursing: Why the power of the crowd is driving the future of business*. Crown Business: New York.

Howe, J. (2006) *The Rise of Crowdsourcing*. Wired Magazine, <http://sistemas-humano-computacionais.wdfiles.com/local--files/capitulo%3Aredes-sociais/Howe_The_Rise_of_ Crowdsourcing.pdf>, retrieved 12.1.2013.

Idea Competition (2013) <www.ideacompetition.org>, retrieved 20.8.2013.

Invesco (2013) http://www.invesco.com/portal/site/global>, retrieved 20.8.2013.

IntraSee (2013) Who is IntraSee? <http://intrasee.com/>, retrieved 20.8.2013.

Jawecki, G. – Füller, J. – Gebauer, J. (2011) A comparison of creative behaviors in online communities across cultures. *Creativity and Innovation Management*, Vol. 20 (3), 144–157.

Jawecki, G. – Füller, J. – Gebauer, J. (2009) A comparison of creative behaviors in online companies across cultures. In: *Proceedings of 16th International Product Development Management Conference*, 7.–9. June, Twente, Netherlands, 1–14.

Jeppesen, L. B. (2005) User toolkits for innovation: consumers support each other. *Journal of Product Innovation Management*, Vol. 22 (4), 347–362.

Jeppesen, L. – Frederiksen, L (2006) Why do users contribute to firm-hosted user communities. *Organization Science*, Vol. 1 (17), 45–63.

Johne, A. (1994) Listening to the voice of the market. *International Marketing Review*, Vol. 11 (1), 47–59.

Kangas, P. – Toivonen, A. – Bäck, A. (2007) ”Ads by Google” and other social media business models. *VTT research notes 2384*.

Kausch, C. – Enkel, E. – Gassmann, O. (2005) *Integrating consumer knowledge in the early innovation process*. <http://www2. warwick.ac.uk/fac/soc/wbs/conf/olkc/archive/oklc6/papers/gassmann _kausch__enkel.pdf>, retrieved 11.1.2010.

Keast, R. – Brown, K. – Mandell, M. (2007) Getting the right mix: Unpacking integrational meanings and strategies. *International Public Management Journal*, Vol. 10 (1), 9–33.

Kettunen, J. – Ilomäki, S-K., – Kalliokoski, P. (2007) *Making sense of innovation management*. Teknologiainfo Teknova: Helsinki.

Kim, A. J. (2000) *Community building. Secret strategies for successful online communities on the web*. Peachpit Press: Berkeley.

Kling, R. – Courtright, C. (2003) Group Behavior and Learning in Electronic Forums: A Sociotechnical Approach. *The Information Society*, Vol. 19 (3), 221–235

Koen, P. – Ajamian, G. – Burkant, R. – Clamen, A. – Davidson, J. – D´Amore, R. – Elkins, C. – Herald, K. – Incorvia, M. – Johnson, A. – Karol, R. – Seibert, R. – Slavejkov, A. – Wagner, K. (2001) Providing clarity and a common language to the “Fuzzy front end”. *Research - Technology Management*, Vol. 44 (2), 46–55.

Kotro, T. (2007) User orientation through experience: A study of hobbyist knowing in product development. *Human Technology*, Vol. 3, (2), 154–166.

Kotro, T. (2006) Käyttäjät tuotekehityksessä: lihaa, verta ja mielikuvia. In: *Innovaatioiden kotiutuminen. Kuluttajatutkimuksen vuosikirja*, eds. P. Repo – I. Koskinen – H. Grönman, Kuluttajatutkimuskeskus: Helsinki.

Kotro, T. (2005) *Hobbyist knowing in product development. Desirable objects ad passion for sports in Suunto Corporation*. Publication series of the University of Art and Design Helsinki A 56. Tammer-Paino Oy: Tampere.

Kotro, T. – Pantzar, M. (2002) Product development and changing cultural landscapes – Is our future in snowboarding? *Design issues*, Vol. 1 (2), 30–45.

Kozinets, R. V. (2010) Netnography: The Marketer's Secret Ingredient. How Campbell´s and other marketers are using the tools of anthropology online. <http://www.technologyreview.com/news/421208/netnography-the-marketers-secret-ingredient/>, retrieved 15.8.2013.

Kozinets, R. V. (2006) Click to connect: Netnography and tribal advertising. *Journal of Advertising Research*, Vol. 46 (3), 1–10.

Kozinets, R. V. (2002) The field behind the screen: using netnography for marketing research in online communications. *Journal of Marketing Research*, Vol. 39 (1), 61–72.

Kozinets, R. V. (2001) *The field behind the screen: using netnography for marketing research in online communities*. <http://kozinets.net/__oneclick_uploads/2009/07/field_behind_round4.pdf>, retrieved 24.5.2010.

Kozinets, R. V. (1999) E-tribalized marketing?: the strategic implications of virtual communities of consumption. *European Management Journal*, Vol. 1 (3), 252–264.

Kratzer, J. – Lettl, C. (2009) Distinctive roles of Lead-Users and opinion leaders in the social networks of schoolchildren. *Journal of Consumer Research*, Vol. 36 (4), 646–659.

Krippendorff, K. (2004) *Content analysis. An introduction to its methodology*. Sage Publications Ltd.: London.

Kristensson, P. – Gustafsson, A. – Archer, T. (2004) Harnessing the creative potential among users. *Journal of Product Innovation Management*, Vol. 21 (1), 4–14.

Kristensson, P. – Matthing, J. – Johansson, N. (2007) Key strategies for the successful involvement of customers in the co-creation of technology-based services. *International Journal of Service Industry Management*, Vol. 19 (4), 474–491.

Kvan, T. (2000) Collaborative design – what is it? *Automation in Construction*, Vol. 9 (4), 409–415.

Kwortnik, R. J. – Ross Jr., W. T. (2007) The role of positive emotions in experiential decisions. *International Journal of Research in Marketing*, Vol. 24 (4), 324–335.

Laros, F. – Steenkamp, J-B. E. M. (2005) Emotions in consumer behaviour: a hierarchical approach. *Journal of Business Research*, Vol. 58 (10), 1437–1445.

Lauri, S. – Kyngäs, S. (2005) *Hoitotieteen teorian kehittäminen*. WSOY: Vantaa.

Laursen, K. – Salter, A. (2006) Open for innovation: The role of openness in explaining innovation performance among U.K. manufacturing firms. *Strategic Management Journal*, Vol. 27 (2), 131–150.

Leimester, J. M. – Krcmar, H. (2004) Das Geschäftsmodel "Virtual Community" – revisited. In: *Produktentwicklung mit virtuellen Communities. Kundenwünsche erfahren und Innovationen realisieren*, eds. C. Herstatt – J. G. Sander, 45–67. Gabler Verlag: Wiesbaden.

Leon, P. G. – Ur, B. – Wang, Y. – Sleeper, M. – Balebako, R. – Shay, R. – Bauer, L. – Christodorescu, M. – Cranor, L. F. (2013) What matters to users? Factors that affect users´ willingness to share information with online advertisers. *Proceedings of the Ninth Symposium on Usable Privacy and Security (SOUPS)*, 24.–26. July, Newcastle, Great Britain, 1–19. <http://dl.acm.org/citation.cfm?id=2501611>, retrieved 20.8.2013.

Lettl, C. (2007) User involvement competence for radical innovation. *Journal of Engineering and Technology Management*, Vol. 24 (1–2), 53–75.

Lettl, C. – Gemünden, H. G. (2005) The entrepreneurial role of innovative users. *Journal of Business and Industrial Marketing*, Vol. 20 (7), 339–346.

Lettl, C. – Rost, K. – von Wartburg, I. (2009) Why are some independent inventors "heroes" and others "hobbyists"? The moderating role of technological diversity and specialization. *Research Policy*, Vol. 38 (2) 243–245.

Lietsala, K. – Sirkkunen, E. (2008) *Social media. Introduction to the tools and processes of participatory economy*. University of Tampere: Tampere.

Liljander, V. – Strandvik, T. (1997) Emotions in service satisfaction. *International Journal of Service Industry Management*, Vol. 8, (2), 148–169.

Lincoln, Y. S. – Guba, E. G. (1985) *Naturalistic inquiry*. Sage publications: Beverly Hills, California.

Lundkvist, A. – Yakhlev, A. (2004) Customer involvement in new service development: a conversational approach. *Managing Service Quality*, Vol. 14 (2), 249–257.

Lüthje, C. (2003) Methoden zur Sicherstellung von Kundenorientierung in den frühen Phasen des Innovationsprozesses. In: *Management der frühen Innovationsphasen*, eds. C. Herstatt – B. Verworn, 35–56. Gabler Verlag: Wiesbaden.

Lüthje, C. (2000) Characteristics of innovating users in a consumer goods field. An empirical study of sport-related product consumers. *MIT Sloan Working Paper No. 4331-02*. <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=298015>, retrieved 1.12.2011.

Lüthje, C. – Herstatt, C. (2004) The Lead-User method: an outline of empirical findings and issues for future research. *R&D Management*, Vol. 34 (5), 553– 568.

Lüthje, C. – Herstatt, C. – von Hippel, E. (2006) User-innovators and "local" information: The case of mountain biking. *Research Policy*, Vol. 34 (6), 951–965.

Mantel, J. R. – Meredith, S. J. (1986) The role of consumer cooperation in the development, marketing, and implementation of innovations. In: The art and science of innovation management, an international perspective. In: *Proceedings of the Fourth International Conference on Product Innovation Management*, Innsbruck/Igls, Austria, August 26-28, 27–41.

Marshall, C. – Rossman, G. B. (2011) *Designing qualitative research.* Fifth edition. Sage Publications Inc.: London.

Matthews, P. C. – Chesters, P. E. (2005) Implementing the information pump by using accessible technology. *Journal of engineering design*, 17 (6), 563–585.

Mathwick, C. (2002) Understanding the online consumer: a typology of online relational norms and behavior. *Journal of Interactive Marketing*, Vol. 16 (1), 40–55.

Mattessich, P. W. – Monsey, B. R. (1992) *Collaboration: What makes it work?* Amherst H. Wilder Foundation: St. Paul, USA.

Mazur, G. (1997) *Voice of consumer analysis: a modern system of front-end GFD-tools, with case studies*. <http://www.mazur.net/works/voice_of_customer.pdf>, retrieved 1.11.2010.

Mayfield, A. (2008) *What is social media?* <http://www.icrossing.co.uk>, retrieved 4.6.2009.

McKinnon, J. (1988) Reliability and validity in field research: some strategies and tactics. *Accounting, Auditing and Accountability Journal*, Vol. 1 (1), 34–54.

Miles, M. B. (1979) Qualitative data as an attractive nuisance: The problem of analysis. *Administrative Science Quarterly*, Vol. 24 (4), 590–601.

Miles, M. B. – Huberman, A. M. (1994) *Qualitative data analysis*. Sage Publications Ltd.: California.

Morrison, P. D. – Roberts, J. H. – von Hippel, E. (2000) Determinants of user innovation and innovation sharing in a local market. *Management Science*, Vol. 46 (12), 1513–1527.

Mustonen, P. (2009) *Social media – a new way to success?* Turku School Economics. Series KR-1:2009.

Nambisan, S. (2002) designing virtual consumer environments for new product development: toward a theory. *Academy of Management review*, Vol. 27 (3), 392–412.

Nambisan, S. – Baron, R. (2007) Interactions in virtual consumer environments: implications for product support and consumer relationship management. *Journal of Interactive Marketing*, Vol. 21 (2), 42–62.

Neuendorff, K. (2002) *The content analysis guidebook*. Sage Publications Ltd.: Thousand Oaks.

Nonaka, I. – Byosiere, P. – Borucki, C. C. – Konnot, N. (1994) Organisational knowledge creation theory: A first comprehensive test. *International Business Review*, Vol. 3 (4), 337–351,

Pantzar, M. (2005) Miten innovaatiot jalkautuvat – tapaus sauvakävely. *Tieteessä tapahtuu*, Vol. 3, 10–15.

Panula, J. (1997) *Vaikutussuhde, käyttösuhde, merkityssuhde. Näkökulmia todellisuuden, joukkoviestinnän ja yleisön väliseen suhteeseen*. Atena Kustannus: Jyväskylä.

Papacharissi, Z. (2004) Democracy online: civilicity, politeness and the democratic potential of online political discussion groups. *New Media Society*, Vol. 6 (2), 259–283.

Parker, R. M. (1990) Power, control and validity in research. *Journal of Learning Disabilities*, Vol. 23 (10), 613–620.

Patton, M. Q. (2002) *Qualitative research and evaluation methods. Third edition*. Sage Publications Inc.: London.

Phillips, D. M – Baumgartner, H. (2002) The role of consumption emotions in the satisfaction response. *Journal of Consumer Psychology*, Vol. 12 (3), 243–252.

Pietilä, V. (1976) *Sisällön erittely*. Gaudeamus: Helsinki.

Piller, F. (2006) User innovation: Der Kunde als Initiator und Beteiligter im Innovationsprozess. In: *Open Innovation. Freier Austausch von Wissen als soziales, politisches und wissenschaftliches Erfolgsmodell*, eds. O. Drossou – S. Krempl, 85–97. Heisedpunkt (Reihe Telepolis): Hannover.

Piller, F. – Schubert, P. – Koch, M. – Möslein, K. (2006) Overcoming mass confusion: collaborative consumer co-design in online communities. *Journal of Computer-Mediated Communication*, Vol. 10 (4), 1–14.

Piller, F. T. – Walcher, D. (2006) Toolkits for Idea Competitions: A Novel Method to Integrate Users in New Product Development. *R & D Management*, Vol. 36 (3), 307–318.

Pitta, D. A. – Fowler, D. (2005) Online consumer communities and their value to new product developers. Journal of Product and Brand Management, Vol. 14 (5), 283–291.

Pitta, D. A. – Franzak, F. – Fowler, D. (2006) A strategic approach to building online customer loyalty: integrating customer profitability tiers. Journal of Consumer Marketing, Vol. 23 (7), 421–429.

Poetz, M. K. - Schreier, M. (2012) The value of crowd-sourcing: Can users really compete with professionals in generating new product ideas? *Journal of Product Innovation Management*, Vol. 29 (2), 245–256.

Polanyi, M. (1966) *The Tacit Dimension*. Routledge & Kegan Paul: London.

Prahalad, C. K. – Ramaswamy, V. (2004a) *The future of competition. Co-creating unique value with consumers*. Harvard Business School Press: Boston.

Prahalad, C. K. – Ramaswamy, V. (2004b) Co-creation experiences: the next practice in value creation. *Journal of Interactive Marketing*, Vol. 18 (3), 5–14.

Prandelli, E. – Sawhney, M. – Verona, G. (2008) *Collaborating with consumers to innovate. Conceiving and marketing products in the networking age*. Edward Elgar: Cheltenham.

Preece, (2000) *Online communities: Designing usability and supporting sociability*. John Wiley & Sons Inc: New York.

Prelec, D. (2001) *Readings packet on the information pump*. Massachussetts Institute of Technology. <http://mitsloan.mit.edu/vc/IPPacket.pdf>, retrieved 20.6.2010.

Priem, R. L. (2007) A consumer perspective on value creation. *Academy of Management Review*, Vol. 32 (1), 219–235.

Puusa, A. – Juuti, P. (2011) Mitä laadullinen tutkimus on? In: *Menetelmäviidakon raivaajat*, eds. A. Puusa – P. Juuti, 47–57. Johtamistaidon opisto: Jyväskylä.

Rad, S. T. (2011) A study of silent customers. In: *Proceedings of the International Conference on Management*, ICM, Penang, Malaysia, 13.–14. June, 790–803.

Ramirez, R. (1999) Value co-production: intellectual origins and implications for practice and research. *Strategic Management Journal*, Vol. 20, (1), 49–65.

Reichart, S. (2002) *Kundenorientierung im Innovationsprozess*. Deutcher Universitäts Verlag: Wiesbaden.

Reichwald, R. – Meyer, A. – Engelmann, M. – Walcher, D. (2007) *Der Kunde als Innovationspartner. Konsumenten integrieren, Flop-Raten reduzieren, Angebote verbessern*. Gabler Verlag: Wiesbaden.

Reichwald, R. – Piller, F. (2006). *Open Innovation. Kunden als Partner im Innovationsprozess*. Deutscher Universitäts Verlag: Wiesbaden.

Rheingold, H. (1993) *The virtual community: Homesteading on the electronic frontier*. MIT Press Edition: London.

Ridings, C. M. – Gefen, D (2004): Virtual community attraction: Why people hang out online. *Journal of Internet-Mediated Communication*, Vol. 10 (1), 1–12.

Riedel, C. – Schraps, S. (2010) Wie Unternehmen kreativer werden. In: *Die frühe Innovationsphase Methoden und Strategien für die Vorentwicklung*, eds. C. Gundlach – A. Glanz – J. Gutsche, 97–118. Symposion Publishing GmbH: Düsseldorf.

Rindova, V. P. – Petkova, A. P. (2007) When is a new thing a good thing? Technological change, product form design, and perceptions of value for product innovations. *Organization Science*, Vol. 18 (2), 217–232.

Robertson, T. (1971) *Innovative behavior and communication*. Holt, Rinehart and Winston: New York.

Rogers, E. M. (2003) *Diffusion of innovations*. Free Press: New York.

Rogers, E. M. (1983) *Diffusion of innovations*. 3rd edition. The Free Press: New York.

Rohracher, H. (2005) *User involvement in innovation processes. Strategies and limitations from a socio-technical perspective*. Profil Verlag GmbH: München.

Rohracher, H. (2003) Users´ role in the social shaping of environmental technologies. *Innovation*, Vol. 16 (2), 177–192.

Rucker, D. D. – Petty, R. E. (2004) Emotion specificity and consumer behaviour: Anger, sadness and preference for activity. *Motivation and Emotion*, Vol. 28 (1), 3–21.

Sandberg, B. (2005) *The hidden market – even for those who create it? Customer-related proactiveness in developing radical innovations*. Publications of the Turku School of Economics and Business Administration, Series A-5.

Sawhney, M. – Prandelli, E. (2001) Beyond consumer knowledge management: consumers as knowledge co-creators. In: *Knowledge management and virtual organizations*, ed. Y. Malhotra, 258–281. Idea group publishing: London.

Sawhney, M. – Verona, E. – Prandelli, E. (2005) Collaborating to create: the internet as a platform for consumer engagement in product innovation. *Journal of Interactive Marketing*, Vol. 19 (4), 1–15.

Schilling, M. A. (2008) *Strategic management of technological innovation*. McGraw Hill: New York.

Schmookler, J. (1957) Inventors past and present. *The Review of Economics and Statistics*, Vol. 39 (3), 321–333.

Scholz, T. (2008) Market ideology and the myths of Web 2.0. *First Monday*, Vol. 3 (3), 1–13.

Schreier, M. – Prügl, R. (2008) Extending lead-user theory: antecedents and consequences of consumers´ lead userness. *Product Innovation Management*, Vol. 25 (4), 331–346.

Schubert, P. – Ginsburg, M. (2000) Virtual communities of transaction: The role of personalization in e-commerce. *Electronic markets*, Vol. 10 (1), 1–13.

Schulze, A. – Hoegl, M. (2008) Organisational knowledge creation and the generation of new product ideas: A behavioral approach. *Research policy*, Vol. 37 (10), 1742–1750.

Schumpeter, J. A. (2008) *Essays on entrepreneurs, innovations, business cycles and the evolution of capitalism*. Transaction Publishers: New Jersey.

Schumpeter, J. A. (1927) The explanation of the business cycle. *Economica*, No. 21, December, 286–311.

Scott, D. M. (2007) *The new rules of marketing and PR. How to use news releases, blogs, podcasting, viral marketing & online media to reach buyers directly*. John Wiley & Sons, Inc: New Jersey.

Seely, J. B. (2003) Foreword: innovating innovation. In: *Open innovation: the new imperative for creating and profiting from technology*, by Chesbrough, H., ix-xiii. Harvard Business School Publishing Corporation: Boston.

Seybold, P. B. (2006*) Outside innovation. How your consumers will co-design your company´s future*. Harper Collins Publishers: New York.

Shah, S. (2000) Sources and patterns of innovation in a consumer product field: innovations in sporting equipment. *Sloan Working Paper*, No. 4105.

Sicilia, M. – Ruiz, S. (2010) The effects of the amount of information on cognitive responses in online purchasing tasks. *Electronic Commerce Research and Applications*, Vol. 9 (2), 183–191.

Silverman, D. (2011) *Interpreting qualitative data. 4th edition*. Sage Publications: London.

Sinkovics, R. R. – Penz, E. – Ghauri, P. N. (2008) Enhancing the trustworthiness of qualitative research in international business. *Management International Review*, Vol. 48 (6), 689–714.

Skiba, F. – Herstatt, C. (2008) Integration of innovative users as source of service innovations. Working paper. <http://www.tuharburg.de/tim/downloads/arbeitspapiere/Arbeitspapier_54.pdf>, retrieved 23.6.2010.

Snow, C. C. – Oystein, D. F. – Lettl, C. – Miles, R. E. (2012) The architecture of cooperation. *Strategic Management Journal*, Vol. 33 (6), 734–750.

Sohn, Y. S. – Joun, H. – Chang, D. R. (2002) A model of consumer information search and online network externalities. *Journal on Interactive Marketing*, Vol. 16 (4) 2–14.

Soll, J. H. (2006) *Ideengenerierung mit Konsumenten in Internet.* Deutscher Universitätsverlag: Wiesbaden.

Soukhoroukova, A. (2007) *Produktinnovation mit Informationsmärkten*. Dissertation. Universität Passau: Passau.

Szmigin, I. (2003) *Understanding the consumer*. Sage Publications: London.

Tesch, R. (1990) *Qualitative research: analysis types and software tools*. The Falmer Press: London.

Top 15 Most Popular Social Networking Sites (2013). <http://www.ebizmba.com/articles/social-networking-websites, retrieved 4.11.2013.

Thomke, S. – von Hippel, E. (2002) Consumers as innovators: a new way to create value. *Harvard Business Review*, Vol. 80 (4), 1–8.

Tinz, T. V. (2007) *Spitzenprodukte durch Spitzensportler? Kooperative Produktentwicklung bei Sportartikeln*. Dissertation der Wirtschaftswissenschaftlichen Fakultät der Universität Zürich: Zürich.

Toivonen, S. (2007) *Web on the move. Landscapes of mobile social media*. VTT research notes: Espoo.

Toivonen, T. (1999) *Empiirinen sosiaalitutkimus. Filosofia ja metodologia*. WSOY: Porvoo.

Trott, P. (2005) *Innovation management and new product development*. *Third edition*. Financial Times Prentice Hall: Harlow.

Tuomi, J. – Sarajärvi, A. (2012) *Laadullinen tutkimus ja sisällönanalyysi*. Tammi: Helsinki.

Turunen, A. (2005) *Innovations as communication processes: A legal framework for governing ideas in busines*s. Lapland University Press: Rovaniemi.

Tuzovic, S. (2010) Frequent (flier) frustration and the dark side of word-of-web: exploring online dysfunctional behavior in online feedback forums. *Journal of Services Marketing*, Vol. 24 (6), 446–457.

Twingly blog (2010) How to monitor the social web with Twingly, <http://blog.twingly.com/2010/06/15/how-to-monitor-the-social-web-with-twingly/>, retrieved 15.8.2013.

Tynjälä, P. (1991) Kvalitatiivisten tutkimusmenetelmien luotettavuudesta. *Kasvatus 5–6*, 387–398.

Ulwick, A. W. (2005) *What consumers want. Using outcome-driven innovation to create breakthrough products and services*. McGrawHill: New York / London.

Ulwick, A. (2002) Turn consumer input into innovation. *Harvard Business review*, Vol. 80 (1), 91–97.

Urban, G. L. – Hauser, J. R. (2004) "Listening in" to find and explore new combinations of consumer needs. *Journal of Marketing*, Vol. 68, (2), 72–87.

Urban, G. L. – Hauser, J. R. (1993a) How consumers allocate their time when searching for information. *Journal of Marketing Research*, Vol. 30 (2), 456–466.

Urban, G. L. – Hauser, J. R. (1993b) *Design and marketing of new products*. Prentice Hall: New Jersey.

Urban, G. – von Hippel E. (1988) Lead user analyses for the development of new industrial products. *Management Science*, Vol. 34 (5), 569–582.

Valtonen, A. (2005) *Industry, competitiveness and design. the historical development of Finnish in-house design functions*. Joining Forces Publication, <http://www2.uiah.fi/joiningforces/papers/Valtonen.pdf>, retrieved 3.1.2013.

Valtonen, A. – Ainamo, A. (2008) The professionalization of product design: Reflections on the Finnish Case. In: *Proceedings in International DMI Education Conference "Design Thinking: New Challenges for Designers, Managers and Organisations*, 14.–15. April, Paris, France. <http://www.dmi.org/dmi/html/conference/academic08/papers/Valtonen%20and%20Ainamo/DMIValtonenAinamo100.pdf>, retrieved 14.12.2012.

Van Rompaey, V. – Hemmeryckx-Deleersnijder, B. – Van Der Meersche, B. – De Mondt, H. – Godon, M. (2005) *Beyond marketing. Applying qualitative user experience techniques on social media application.* <http://jokamajo.org/files/encompas.research.design. pdf>, retrieved 11.1.2011.

Verona, G. – Prandelli, E. – Sawhney, M. (2006) Innovation and virtual environments: towards virtual knowledge brokers. *Organisation Studies*, Vol. 27 (6), 765–788.

Verworn, B. – Herstatt, C. (1999) *Approaches to the "Fuzzy Front End" of innovation*. Arbeitspapier Nr. 2., Technische Universität Hamburg – Harburg 2, urn:nbn:de:gbv:830-opus-1654.

Volmer, C. – Precourt, G. (2008) *Always on. Advertising, marketing, and media in a era of consumer control*. McGrawHill: New York / Chicago / Los Angeles.

von Hippel, E. (2007) Horizontal innovation networks – by and for users. *Industrial and Corporate Change*, Vol. 16 (2), 293–315.

von Hippel, E. (2005) *Democratising innovation*. The MIT Press: Cambridge, England.

von Hippel, E. (2001) Innovation by user communities: learning from open-source software. *Mit Sloan Management Review*, Vol. 42 (4), 82–86.

von Hippel, E. (1988) *The sources of innovation*. Oxford University Press: Oxford.

von Hippel, E. (1986) Lead users: a source of novel product concepts. *Management Science*, Vol. 32 (7), 791–805.

von Hippel, E. – Katz, R. (2002), Shifting innovation to users via toolkits. *Management Science*, Vol. 487 (7), 821–833.

Wahren, H. K. (2004) *Erfolgsfaktor Innovation. Ideen systematisch generieren, bewerten und umsetzen*. Springer Verlag: Berlin.

Walter, A. – Back, T. (2011) Towards measuring crowdsourcing success: An empirical study on effects of external factors in online idea contests. In: *Proceedings of 6th Mediterranean Conference on Information Systems (MCIS´11)*, 1–12.

Wasko, M. – Faraj, S. (2000) "Is it what one does": Why people participate and help others in electronic communities of practice. *Journal of Strategic Information Systems*, Vol.9 (2-3), 155–173.

Weber, L. (2009) *Marketing to the social web: how digital consumer communities build your business.* John Wiley & Sons: New Jersey.

Wecht, C. H. (2006) *Das Management aktiver Kundenintegration in der Frühphase des Innovationsprozesses*. Deutscher Universitäts-Verlag: Wiesbaden.

Wecht, C. H. (2005) Frühe active Kundenintegration in den Innovationsprozess. Alwa & Deil Druckerei GmbH: Wien.

Welsh, E. (2008) Dealing with data: Using NVivo in the qualititative data analysis process. *Qualitative Social Research*, Vol.3 (2), Art. 26. <http://www.qualitative-research.net/index.php/fqs/article/view/865>, retrieved 6.9.2012.

Wikström, S. (1996) Value creation by company-consumer interaction. *Journal of Marketing Management*, Vol.12 (5), 359–374.

Wobser, G. (2003) *Produktentwicklung in Kooperation mit Anwendern. Einsatzmöglichkeiten des Internets*. Deutcher Universitäts Verlag: Wiesbaden.

Wojcicki, S. (2011) *The eight pillars of innovation.* <http://www.google.com/think/articles/8-pillars-of-innovation.html>, retrieved 20.8.2013.

Volmer, C. – Precourt, G. (2008) *Always on. Advertising, marketing, and media in a era of consumer control*. McGrawHill: New York.

Wood, S. L. – Moreau, P. C. (2006) From fear to loathing? How emotions influences the evaluation and early use of innovations. *Journal of Marketing*, Vol. 70 (3), 44–57.

Woodruff, R. B. (1997) Customer value: The next source for competitive advantage. *Journal of the Academy of Marketing Science*, Vol. 25 (2), 139–153.

Wright, J. (2006) *Blog marketing. The revolutionary new way to increase sales, build your brand, and get exceptional results*. McGraw-Hill: New York.

Zboralski, K. – Gemünden, H. G. (2004) Die Integration von Kunden in Communities of Practise. In: *Produktentwicklung mit virtuellen Communities. Kundenwünsche erfahren und Innovationen realisieren*, eds. Herstatt, C. – Sander, J. G., 277–302. Gabler Verlag: Wiesbaden.

Zeithaml, V. (1988) Consumer perceptions of price, quality and value: a means-end model and synthesis of evidence. *Journal of Marketing*, Vol. 52 (4), 2–22.

Zirger, B. J. – Maidique, M. A. (1990) A model of new product development: an empirical test. *Management Science*, Vol. 36 (7), 867–883.

Appendix 1: Example of how the discussions were analysed at the first stage (the content and the names have been changed)

Topic	Headline for the discussion	Start date	Product	Discussion forum	Number of comments	Reason for the discussion: problem/ advice to others/ feedback	Main point	Summary of discussion	Result (if any)
Connection between devices.	Polar RS200SD	20.7.2010	Polar RS200SD	lenkkivihko.com	3	Problem	It takes a long time before the skin is sufficiently wet for the belt to work.	Use water before use or clean, use chemicals, check batteries, empty the memory.	Writer waters the skin, not the belt, which works.
Efficient training.	What is the program level?	15.6.2008	TC4	Suunto TC4	11	Problem	I'd like to influence my training level, but don't know how.	Advice offered, concrete instructions, where to push.	
Training results.	Coach acting strangely.	11.6.2009	T4C	Suunto TC4	23	Problem	Training results are suddenly strange, can the batteries be the reason?	Try to update the version, try to stabilise it, reset the settings if possible, consistency is important.	

Appendix 2: Example of an analysed discussion (the names and the content have been changed)

No.	Name of the person	Status	Product mentioned	Main point	Comment / question	Same theme/ theme changes	Positive/ negative tone	Consequence (if any)	Innovation ideas (if any)
Question	Ed	Active member	Suunto	I think that we have found a way to calculate training stress easily, formulas attached and max-TE value calculation. Is this working or am I missing something?	Question		Positive		
Comment 1	Paul	Senior member	General	Sorry, EPOC/TE is the training stress and gives you the recovery period, Kcals reflect your METS and the duration and intensity of your exercise.	Comment		Positive		
Comment 2	Jill	Active member	General	This is interesting, here are some links about training load, EPOC etc.	Comment		Positive		
Comment 3	James	senior member	general	You could do a short duration high intensity session with low Kcals, the other issue is where intervals both Kcals can be low and TE look low but fatigue quite high	Comment		Positive		
Comment 4	Riemer	Newbie	T3C / T6C	I have T3C, I´m not sure if T6C shows the TE in the same way. Does anyone know? How can I use the batteries efficiently?	Question	New	Positive		
Comment 5	Ed	Active member	Suunto	It's interesting, Suunto has good equipment. How did you calculate your training load?	Question to comment 2		Positive		
Comment 6	Sadie	Newbie	T6C	Does anyone know if it's possible to calculate Kcals and EPOC at the same time?	Question	New	Positive		

Appendix 3: Content related to buying behaviour support in general discussion forums

Theme	Examples of the content
What kind of a HRM should I buy?	Do you have any experience? (24)[24] What would you recommend to me? (11) Which HRM is suitable for water sports? (3) What is the cheapest HRM with a data transfer possibility? Can someone recommend an HRM with running features (2), interval timing and a speed control. With which can I do orienteering in the forest? (2)
I prefer this one, because…	It's of high quality. it works well. (23) it's very accurate (4) and reliable. (2) it looks very good (2) training software is very nice. (6) material is really good. you can change the battery. of the compatibility with the belts. you can modify the functions. it works fine in water.
I don't like this one / I'm not buying this one, because…	there has been a lot of discussions and problems. (2) it's not showing EPOC-values. I've had problems with efficiency. there are a lot of quality problems. it is bad. (5) there are problems with software. (2) they are very expensive. (3) of inaccurate measurements. (6) it's too technical. (3) the GPS does not working properly. (2) it is not good for running, and I'm training for a marathon. (2), there are very few possibilities for modifications. it eats a lot of batteries. (2)
I'd like to buy this one, but…	what is the right price now? (7) what kind of analysis software comes with the device? (2) where can I get it? (2) can I install it like this (photos)? are these compatible? (3) is there new isolation and cover in the package? how flexible is the belt and how can I measure it? how should I train with an HRM so that it understands my goals? (2) do I also need additional equipment? (2) could you, please, show a picture of your device?
If you want to buy an HRM…	you can buy it here (link). (8) I bought this one and like it. (33) here are some prices. (12) buy this one, if you want to follow your level of HR, find out how to be efficient. you can read user experiences here. (2) don't buy this one as the information given is insufficient (4) and there are no support pages. (2)

[24] Numbers in parentheses indicate how often the topic was mentioned. Those without numbers indicate n=1.

Appendix 4: Content related to buying behaviour support in Suunto's discussion forums

Theme	Examples of the content
What kind of an HRM should I buy?	Do you have any experiences? (2)[25]
I prefer this one because…	it's more comfortable to wear. it's shorter and lighter than the old ones. I activated and paired it without any problems. it's accurate. (4) the distance accuracy is clearly attached. it's great in situations when instant speed is important. I'm very happy with it. it's an invaluable tool. it's very flexible. it can show barometer reading.
I don't like this one / I'm not buying this one because…	speed is a random number once you deviate even slightly from the calibrated speed. distance is easily incorrect. accuracy problems. (2) so many things are not working. (3) when I have Windows on my PC, everything just freezes. it's too expensive. the communication between the device and PC is problematic.
I'd like to buy this one, but…	how does it handle low temperatures? do you use the same CF with the new device? I'm looking for a cheaper replacement. what is the difference between this one and its update? (2) will the ascent function be true?
If you want to buy an HRM…	you cannot really criticise the accuracy, unless you always use it in the same conditions. remember to budget 450 USD for the watch and 10 USD for a headlight, if you plan to run in the dark. look at this link for charts. (2) just for your information, I asked about the update, but didn't receive a good answer. you have to realise that they are going to charge for the updates. in this one there is training EPOC on the screen during training. you can customise the display. cadence is compatible, in this HRM, with new cycling cadence sensors. in this model it's possible to turn off the R-R recording. here is a link to my websites, I can calculate optimal training loads for you. I have just written a running guide for this new HRM. the key to succeed is to get the correct AC and understand how to get the correct mix of duration intensity and recovery.

[25] Numbers indicate how often the topic was mentioned. Those without numbers indicate n=1.

Appendix 5: Participation of the trainer in the discussions

Content	Number of comments	Examples of comments
Opinions on the product.	4	"Suunto / Firstbeat are my favourite packages." "I don't understand what you mean by ugly."
Answers to questions on training results.	5	"I'm not sure they are good examples. TE2 is very low and recovery almost immediate." "e-mail me and I'll help, this is the most accurate product on the market." "I'll explain your TE-values here."
Answers related to questions on training efficiency.	13	"You could do a short duration high intensity session with low Kcals, the other issue is where intervals both Kcals may be low and TE look low but fatigue quite high." "Both of your sessions demand the same recovery period, granted a session has to be tailored, but it depends on what you are trying to achieve." "I think that I may have to write a document and post it on my website about how to use the calculator." "Very important points about thresholds, it's important to know when to adjust your AC, you'll need to have your personal settings correct, have a look at pages 38-41."
Comments related to the software.	6	"The T6C and T6 is a good combination, but the underlying principles are the same. The power of the software is the key thing." "Give some specific examples, which versions of the software, it's difficult to follow general discussions." "I'm not sure the upgrade will keep the old software settings. You'll need to ask Suunto."

Article 1

Haavisto, Piia (2012) Social media discussion forums and product innovation – The way forward? First Monday 17 (10).

Social media discussion forums and product innovation – The way forward?

by Piia Haavisto

Abstract

The purpose of this paper is to examine the potential use of social media discussion forums in product innovation. The literature shows the value of sport addicts and hobbyists as innovators in product innovation; hence this study is related to sports. This is an empirical study based on substantial data collected from 28 discussion forums. Altogether 2,178 discussions related to heart rate monitors have been evaluated for this paper.

Discussion forums can be regarded as a source of product innovation. However, due to the excessive amount of information in these forums, a planned approach in order to utilize these remarks is necessary. Sport addicts and hobbyists are very interested in product improvements and usage possibilities, forming a considerable resource. Social media discussion forums can replace focus groups, online surveys and panels, and it is easy to reach large groups, test ideas and secure feedback. However, the rapid speed in conversations and excessive need for interaction between individuals set high demands for organizations, as they should clearly decide how to participate, when and how to direct discussions, and how to effectively be present.

Contents

Introduction

During the last few years, social media has become very popular, appearing in newspapers, other media and conversations almost daily. New possibilities offered by its different applications are presented and success stories told. There is some interest in the corporate world in social media but, in some cases, organizations are unclear on how to effectively utilize social media. Success stories told by some companies and professionals are by their nature vague and leave quite much to the imagination. Most often, it appears that companies are interested in social media as a means to gather consumer feedback and to market specific products. Social media product innovation has been regarded as more complicated and demanding.

Social media can strictly be defined as media content that has been produced and shared to a specific community or collection of communities (Heinonen, 2009). Usually social media is linked with Internet–based applications that are targeted for conversation, socializing and networking online. Social media is often defined as being interactive, sharing information about

something of mutual interest (Evans, 2008). The challenge to organizations is to offer interesting topics and content at a relatively rapid (in terms of the organization) speed. Social media applications are characterized by openness, participation, conversation, community and connectedness, and include, for instance, social networks, blogs, wikis, podcasts, discussion forums, virtual worlds and photo–, audio– and video sharing.

Product innovation is interpreted in this paper as the development of a new product (Trott, 2005), as a result of improvements made to existing products (Ulwick, 2005). Product innovation is an umbrella term which embraces improvements as well as radical alterations to what is produced or supplied (Johne, 1994). Innovations can be divided into radical and incremental, of which incremental innovations rely on continuous improvements to products (Hilzenbecher, 2005) or to products that have minor changes in attributes from the consumers'perspective (Hoonsopon and Tuenrom, 2009; Schilling, 2008; Reichwald, *et al.*, 2007). These innovations might not be particularly new or exceptional; they might have been previously known and involve only a minor adjustment (Schilling, 2008). More than 80 percent of innovation initiatives are designed to develop incremental innovations that already have an established consumer base (Ulwick, 2005). The risks related to innovation tend to be lower for incremental innovations (Prandelli, *et al.*, 2008). This paper concentrates on incremental product innovations as they seem to fit better into the nature of discussion forums. The main ingredient in discussions is their interactivity and unstructured communication. It is difficult to maintain a long discussion concentrated on a single topic. It would be a challenge to develop totally new products in discussion forums, but they offer a constant flow of ideas for minor improvements as well as insights into consumers.

Many researchers in product innovation have been interested in the later stages of the product innovation process and have already recognized opportunities that could be realized in practice. Less research has been devoted to early stages of the processs, partly because information gathered during later stages is seen as more reliable (Verworn and Herstatt, 1999) and therefore has immediate utility to many researchers and companies. On the other hand, if it is possible to specify a product clearly during the early stages of the innovation process, it will lead to cost intensive and efficient work during later stages (Reichwald, *et al.*, 2007). Discussion forums offer a constant flow of ideas, but they are hardly usable at only an observational level: an intervention with specified questions is needed. With this strategy social media discussion forums are a way forward in product innovation.

Some research has examined the early stages of the product innovation process. For example, management of the fuzzy front end has been treated by Verworn and Herstatt (1999), while product innovation with consumers, and their integration into the whole process has been examined by Wobser (2003), Wecht (2005), Reichart (2002), and Lüthje (2004). In addition to product innovation management, several themes have been mentioned separately: idea competitions (Soll, 2006), toolkits (Bartl, 2006), community based innovation (Bartl, 2006), virtual communities (Herstatt and Sander, 2004; Jawecki, *et al.*, 2009) and virtual worlds (Herstatt and Sander, 2004). Many of these studies are at a rather general level, concentrating on innovation management and pointing out the importance of consumer integration throughout the whole product innovation process. Virtual worlds have been seen as a very potential area for co–creation with consumers.

Some attention has been paid to different brand communities and online communities in product innovation. However, in general, discussion forums have been mainly studied only for advertising and promotional purposes as well as for gathering information. A closer link to this study was found in educational research, where analysis of the contents of discussions tied to the role of an instructor were studied. Thus, the possible significant role of discussion forums in product innovation is understood, but has remained unclear.

As social media and related phenomena are relatively new, many different experiments are typical. A relatively large amount of literature is very practice–oriented, in order to financially benefit from social media. In this sense, product innovation has not raised a great deal of interest, as immediate benefits in marketing are seen easier as more attainable. Weber (2009) argues, however, that community building focusing on a common interest of its members is one of the fastest growing applications on the Internet. Thus, discussion forums offer a remarkable resource for product innovation and a possibility to transform early stages of the product innovation process into new dimensions.

Social media product innovation

Developing new ideas seems to be the starting point for innovation (Trott, 2005), especially the notion of “perceived newness” by consumers regardless of a given product’s “real newness” (Rogers, 2003; Robertson, 1971). New ideas are the starting point for innovation (Wecht, 2005; Dahan and Hauser, 2001; Franz and Wolkinger, 2003; Kettunen, *et al.*, 2004) and as an important phase in creating a successful product innovation process. At a very preliminary stage, an abundance of ideas is important. Ideas are analyzed and evaluated several times, and only a few are seen as relevant for future development. Often ideas which are considered insignificant or irrelevant by those suggesting them are those which other members of the creative group find as innovative, inspirational or novel with respect to rest of the competition (Legrenzi, 2005). In this sense, discussion forums offer a good place for observation and a possibility to discover what consumers really think about a specific product.

Although activities in the early stages of the product innovation process are often considered generally chaotic, unpredictable and unstructured (Koen, *et al.*, 2001), Dahan and Mendelson (2001) state that this uncertainty arises from imperfect information about consumers and markets, as well as undiscovered or untested product designs and technologies. The start of the innovation process presents one of the most remarkable opportunities for improving the overall innovation process (Koen, *et al.*, 2001; Dahan and Hauser, 2001; Bragg and Bragg, 2005), if a given organization manages the execution and delivery of an idea design properly (Dahan and Mendelson, 2001).

Figure 1 presents an overview of the idea generation stage in the innovation process, emphasizing the importance of interactive skills, creativity, motivation as well as technical knowledge. As described in this figure, both consumers and corporate professionals are needed in the process of finding possible product opportunity gaps for new or modified products. As noted in the figure, simple observation is hardly sufficient; instead interactivity is needed.

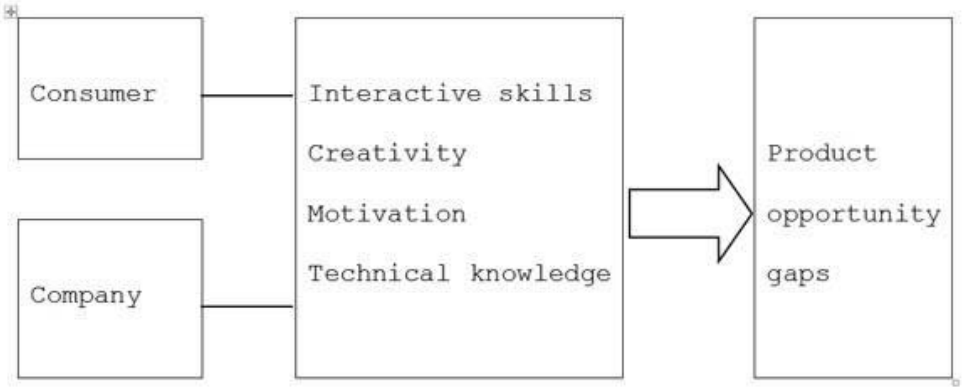

Figure 1: Consumers and professionals co–creating in the product innovation process.

Among product innovation researchers, understanding and meeting consumer needs are amongst the most important success factors for new products (Wecht, 2005; von Hippel, 2001; von Hippel and Katz, 2002; Zirger and Maidique, 1990; Cooper, 1994; Day, *et al.*, 1979; Hoffmann, 2007, 2006; Cooper and Kleinschmidt, 1986; Hauser, *et al.*, 2006; Heyenga, 1997). The greatest challenge to product and service innovation is to identify existing, but also future, consumer needs (Soll, 2006). Therefore, accurate information on consumer needs and their context (von Hippel, 2001) are essential as well as knowledge about former experiences, expectations on how a product will be used (Rohracher, 2005) and its place in the market (Tinz, 2007; Heiskanen and Lovio, 2007). Here discussion forums can be a relevant source of information, if an organization has a specific plan to collect relevant information.

Social media applications have a clear advantage compared to many traditional methods: they are often free of charge or at least very inexpensive. It should be noted, however, that they are usually thought as a complementing function, not a replacement tp traditional methods. The interactive nature of social media demands time and thus resources from organizations, making them more costly than at first blush. However, the active involvement of consumers is essential and special attention should be paid to consumer integration in product innovation. Participants are motivated to interact in discussions either to order to resolve their own problems or to help others. In discussions, there are both very active individuals and those than that just seem to lurk. To achieve the best results, organizations should motivate participants to remain active in discussions; hence, a consumer integration plan would be important.

Typically for social media and interaction with consumers there is a need for intensity, anonymity and interactivity (Bartl, 2006). Experimentation with Internet technologies attract many organizations, as they are easy to implement, inexpensive and easily repeatable (Soll, 2006), and can reduce risks and market uncertainties (Füller and Matzler, 2007). There is no complete list of different methods, but the most common ones for idea development have been collected in Table 1. Organizations can choose a passive way to observe and manage discussions, asking for suggestions and feedback from consumers. A more active approach would be to interact with consumers, to strive for a deeper dialogue. Professionals and active consumers may also work together to develop special online platforms for product innovation and design.

Method	Web-based tools	Typical
Listening in	Discussion forums Suggestion boxes Consumer feedback & complaints Consumer analysis Consumer information Consumer observation	Design for consumers Indirect collection of consumer (market) information Consumer as passive target
Asking consumers & active dialogue	Idea competitions Information pump Dialogue Consumer & user panels Surveys	Design with consumers Company / consumer initiated dialogue
Creating together	User design Virtual concept testing Web-sites for concept development Toolkits / platforms Virtual communities	Design by consumers Very active consumers Lead-Users & co-creation communities

Table 1: Common methods for utilizing discussion forums.

Listening and monitoring are mainly suitable for incremental innovations and are easy to organize whereas radical innovations demand interactivity, identification of potential experienced consumers and building a focus group; hence they are found only seldomly (Herstatt and Sander, 2004). The role of the consumer is changing from a simple user of products and services to a co–equal partner, as the consumers are becoming co–producers and co–designers (Reichwald, *et al.*, 2007). Conceptualizing the consumer as an active participant instead of a passive evaluator in the product innovation process has diminished the gap between consumers and manufacturers (Van Rompaey, *et al.*, 2005): Consumers involved in the entire process, that is, integrated into the whole product innovation process (Wecht, 2005) as designers or stakeholders, have a different and more vital role, than simple commentators (Van Rompaey, *et al.*, 2005).

Many of these methods can be used differently in different circumstances, if only the goals and reasons behind consumer involvement have been defined clearly. For instance, discussion groups are useful not only for passively analyzing, but also for sharing and developing ideas. The utility of information extracted from discussions depends on understanding their context (Hornitzky, 2010). Hence, interactivity need to meet not only the organization's expectations but those of participating consumers in order to secure honest input and feedback (Füller and Matzler, 2007). Social media operates at Internet speed; hence, answers and comments need to be processed quickly within 48 hours at a maximum. This turnaround time exerts real pressure on organizations to maintain a constant presence. However, with careful planning and an open attitude, discussion forums can bring many benefits to a company in product innovation: the possibility to understand consumers, to hear opinions and ideas, and discover improvements to existing products.

To succeed in consumer integration, companies should have clear methods and strategies to involve consumers (Soll, 2006): Which consumers should be integrated into the product innovation process? What contents should be regarded as the most relevant in the process? What methods should be used? What kinds of information will be forwarded to professionals that have no direct contact to consumers? (Reichart, 2002).

Successful consumer integration depends on finding innovative consumers (Bartl, 2006): especially those that are passionate and knowledgeable with a clear vision and understanding of the market realities (Seybold, 2006). Firms need to extent their ability to absorb consumer knowledge that currently is beyond their reach and influence (Verona, *et al.*, 2006). Online possibilities for consumer integration have special value. As interaction between firms and consumers is very important in the innovation process (Verona, *et al.*, 2006), special interactive methods for cooperation are important (Wobser, 2003).

The role of consumers and producers in product innovation is still not comprehensively conceptualized (Heiskanen and Lovio, 2007). How consumer orientation and integration can be included in the product innovation process is yet unclear (Lüthje, 2004). Conventional market research provides consumers with a passive role and does not view them as possible innovators, with companies seen as active and constructive (Hoffmann, 2007; Sawhney, *et al.*, 2005). Where consumers have been actively involved in design processes (Rohracher, 2005; von Hippel, 1982; Scheier and Prügl 2008), such as sports and technology, have led to successful new products (Urban and von Hippel, 1988). In discussion forums, it is sometimes easy to identify the most useful participants as their comments are very often quite professional.

Companies are moving from closed, internal innovation towards more open innovation practices that promise relatively easy access to need and problem solving information and thus helps to create a better fit–to–market. For most companies, the possibilities and rules as well as research tools are still quite unclear, and the changing social media environment does not make it any easier for them. It is clear that the consumer's role has changed, a consumer with a desire to contribute and innovate. Companies are faced with a challenge to interact, maintain dialogues and create contacts for consumers. Some research has supported obervational methods (Franke and Shah, 2003), while other research emphasizes the role of interaction and openness, even development of a two–way learning relationship with individual consumers (Prandelli, *et al.*, 2008). Dialogue is challenging for companies: it includes an empathic understanding built around understanding the consumers' experience as well as recognizing the emotional, social, and cultural context of these experiences (Prahalad and Ramaswamy, 2004). Companies should understand consumer needs and preferences, attempting to create consumer value in concert with consumers. However, companies should understand that not all of their participation in social media will be appreciated.

Social media has changed social and corporate environments. Earlier, the ability to create content and distribute it to an audience was limited to traditional media, whereas now everyone can contribute and participate (Mustonen, 2009). Social media are, by their nature, not bound by geography, moving at an accelerated rate on a global basis. Therefore traditional cultural differences might not have a significant influence on different threads under discussion.

Social media has given a great deal of power to consumers and thus present challenges to many companies (Mustonen, 2009). The popularity of social communities has created new and unforeseen social possibilities. Participating in online discussions, and maintaining them, can help companies to connect more deeply with their best consumers and gain valuable consumer insight (Vollmer and Precourt, 2008). The most successful companies participate actively online; provide ideas and advice on a wide variety of subjects and topics, thus gaining the trust of their consumers that in turn help with different problems (Scott, 2007).

The special nature of the Internet challenges companies: they must constantly offer interesting topics for discussion to encourage the consumers to return to forums (Antikainen, 2007; Buss

and Straus, 2009). Discussion forums allow individual members to find others with similar concerns or areas of expertise, and to engage in discussions with them (Kosonen, 2008) as well as help them expand their networks (Buss and Straus, 2009). The open nature of messaging in discussion forums (Ravid and Rafaeli, 2004), with an emphasis on member–to–member interaction (Buss and Strauss, 2009) provides ample opportunities for all participants.

In social media, trust and reliability are regarded as extremely important. Hence it would be wise to start on a small scale, allowing participants an opportunity to develop a specific interactive space (Kim, 2000). Jawecki, *et al.* (2009) define discussion forums as places to gather information for product innovation. As soon as a creative member finds a solution, idea or concept, he usually presents it to others in the community for comment. However, without a moderator, a discussion can easily unravel with some commentary being ignored. Consequently, it is important to have an experienced moderator directing discussion and keeping it relevant and positive. With careful moderation, consumer views and needs will be more quickly and specifically brought to the attention of specific members of the corporate hierarchy and utilized specifically in product innovation.

Discussion forums as a source for social media product innovation

A key notion in innovation success is to understand the voice of consumers, their needs and preferences (Urban and Hauser, 1993). Most difficulties from unsuccessful innovations are related to technical problems or inappropriate orientation to consumer needs (Reichwald, *et al.*, 2007). Usually four benefits are presented in relation to active consumer integration: shorter time–to–market; reduced cost–to–market; better fit–to–market; and, higher degree of newness–to–market (Heyenga, 1997; Reichwald, *et al.*, 2007). Companies integrating users appreciate their idea contributions in terms of originality, productivity and stickiness (meaning that they would not have come across those ideas themselves) (Skiba and Herstatt, 2008).

Discussion forums are the longest established form of social media, typically built around specific topics and interests. Each separate discussion in a forum is known as a thread, and typically many different threads are active simultaneously. Discussion forums are an expression of online communities allowing participants to post a topic for others to review. Other participants can view the topic and post their own comment in linear fashion. Most forums are public, allowing anyone to sign up at any time.

Discussion forums have not been studied specifically in terms of product innovation as their utility is considered by some to be time consuming and inefficient. However some companies voice an interest in their use, as they form an extensive and free database of consumers and their needs. However this extensiveness hinders many companies from using them, given the amount of information that can be generated over time.

Jawecki, *et al.* (2009), Lüthje (2004) and Tinz (2007), for example, have demonstrated the importance of sport addicts and hobbyists in product innovation. Therefore, for this study, Finnish sports–related discussion forums were examined, with ultimately six being chosen for further analysis — www.fillarifoorumi.fi, www.kiloklubi.fi, www.lenkkivihko.fi, www.nojatuolifoorumi.fi, www.potku.net and www.suomi24.fi. It was noticed that the most popular topic in them were heart rate monitors, with Suunto (http://www.suunto.com/) heart rate monitors invoking the most discussion (Polar (http://www.polarusa.com/) being the second). These threads were examined and the process continued with the analysis of Suunto's forums with 22 different discussion groups. In total 2,187 discussion messages were analysed, first roughly in MS Excel and then more specifically in the NVivo programme.

As presented in Table 2, almost all of the discussions started with a concrete problem. Only some discussions were started with a voluntary piece of advice given to others or some form of company feedback.

Start of the discussion	Amount of discussions	Percentage
Problem	2133	97,5
Advice	25	1,1
Feedback	21	1,0
General	5	0,2
Not relevant	3	0,1
Total	**2187**	**100**

Table 2: Start of discussion.

Table 3 illustrates that a typical starting comment gained under 10 answers, and that most of the discussion was brief. Long discussion, with over 50 or even over 20 comments, was rare. Typically a long discussion was related to either reliable or accurate training results or a purchasing decision.

Amount of comments	Amount of discussions	Percentage
≥100	6	0,3
50 – 99	10	0,5
40 – 49	6	0,3
30 – 39	13	0,6
20 - 29	36	1,6
10 – 19	178	8,1
5 – 9	372	17,0
2 – 4	808	36,9
1	433	19,8
0	325	14,9
Total	**2187**	**100**

Table 3: Length of discussion.

As shown in Table 4, most discussion was related to technical advice, such as connection problems between heart rate monitors and other devices such as foot pods, GPS pods and PCs,

training results and computer programmes needed in conjunction with heart rate monitors and related issues.

Theme	Amount of discussions	Percentages
Efficient training	56	2,6
batteries	45	2,1
belt	59	2,7
computer programmes	236	10,8
maintenance	24	1,1
manual	25	1,1
technical advice	594	27,2
connection between / to devices	356	16,3
training results	339	15,5
buying the monitor	149	6,8
buying parts	80	3,7
selling	6	0,3
watch	137	6,3
usage possibilities	54	2,5
not linked	7	0,3
photos	6	0,3
wishes for the company	14	0,6
Total	**2187**	**100**

Table 4: Themes under discussion.

The list of discussion forums studied and the amount of discussions in them is presented in the Appendix. A typical discussion is short, with less than 10 comments (88.6 percent) and is usually related to a specific problem. Once the problem has been resolved, the discussion ends unless someone asks a new question that continues the initial discussion. Thus the last comments in a specific thread can initiate a totally different theme. Consequently, it can be difficult to follow a specific discussion, as someone might not answer the immediate previous question, but instead refer to a remark made many months earlier.

Most of the discussions examined in this study were related to concrete technical problems. Hence, a corporation may investigate ways in which it can start a discussion around a perceived problem with a given product. Discussions related to technical problems are, by their nature, practical and instigate in turn comments about the practical uses of equipment related to product and performance improvements.

Conclusions

This study illustrates that discussion forums can be regarded as a source for product innovation ideas. However, in order to secure relevant information, oreganizations should participate rather than just follow and observe threads, for there is a strong need for some direction in discussions. Discussion forums contain valuable content which can be secured through constant and involved interactivity. This interactivity needs not to be forced, but responsive to the community. In Suunto's discussion forums, there were certain threads where the presence of corporate evangelists existed: they participated by toning down negative commentary, highlighting the positive, and leading discussion in new directions.

Discussion forums are regarded by some as relatively risky. On the other hand, they give organizations first–hand information about their customers. In social media, interactivity and timeliness are crucial, so there are costs to maintaining a presence in any flavor of social media. These demands could be challenging to many organizations.

An organization could see its role as a promoter of interactivity as well as offering technical and accurate information for its customers. It is important that social media "does not forget", so there is little room or tolerance for errors. Therefore social media strategy and action plans are required in order to minimize mistakes.

To achieve the best results, an organization should establish a discussion forum of its own, or even more specifically several forums with well–defined and narrow themes. For example, Suunto had different discussions started for each product. To be successful, a company needs to attract motivated participants and knowledgeable consumers. With these participants, the level of discussion will be high and their length suitable for discovering new product ideas. These forums can replace traditional focus groups, online questionnaires and panels. Consequently, the best way to motivate participants is to keep the level of discussion focused, so that participants can find solutions to their problems, be able to interact with other participants and feel that their opinions and expertise matters to a specific organization. A key to success is a strategy and plan for consumer integration in social media product innovation. With this scenario, discussion forums can be used as a relevant source for product innovation ideas.

About the author

Piia Haavisto is a Senior Lecturer at Laurea University of Applied Sciences in Hyvinkää, Finland. Her research interests are product innovation, social media and international business.
E–mail: piia [dot] haavisto [at] laurea [dot] fi

References

Maria Antikainen, 2007. "The attraction of company online communities: A multiple case study," academic dissertation, Department of Management Studies, University of Tampere, at http://acta.uta.fi/pdf/978-951-44-6850-6.pdf, accessed 23 September 2012.

Michael Bartl, 2006. *Virtuelle kundenintegration in die neuproduktentwicklung*. Wiesbaden: Deutscher Universitäts–Verlag.

Anna Buss and Nancy Strauss, 2009. *Online communities handbook: Building your business and brand on the Web*. Berkeley, Calif.: New Riders.

Andrew Bragg and Mary Bragg, 2005. *Developing new business ideas, A step–by–step guide to creating new business ideas worth backing*. Harlow, England: *Financial Times*/Prentice Hall.

Robert G. Cooper, 1994. "New products: The factors that drive success," *International Marketing Review*, volume 11, number 1, pp. 60–76.http://dx.doi.org/10.1108/02651339410057527

Robert G. Cooper and Elko J. Kleinschmidt, 1986. "An investigation into the new product process: Steps, deficiencies and impact," *Journal of Product Innovation Management*, volume 3, number 2, pp. 71–85.http://dx.doi.org/10.1016/0737-6782(86)90030-5

Ely Dahan and John R. Hauser, 2001. "Product development — Managing a dispersed process," In: Barton A Weitz and Robin Wensley (editors). *Handbook of marketing*. London: Sage, pp. 179–204.

Ely Dahan and Haim Mendelson, 2001. "An extreme–value model of concept testing," *Management Science*, volume 47, number 1, pp. 102–116.http://dx.doi.org/10.1287/mnsc.47.1.102.10666

George S. Day, Allan D. Shocker and Rajendra K. Srivastava, 1979. "Consumer–oriented approaches to identifying product–markets," *Journal of Marketing*, volume 43, number 4, pp. 8–19.http://dx.doi.org/10.2307/1250266

Dave Evans, 2008. *Social media marketing: An hour a day*. Indianapolis, Ind.: Wiley.

Nikolaus Franke and Sonali Shah, 2003. "How communities support innovative activities: An exploration of assistance and sharing among end–users," *Research Policy*, volume 32, number 1, pp. 157–178.http://dx.doi.org/10.1016/S0048-7333(02)00006-9

Reinhard Franz and Thomas Wolkinger, 2003. "Consumer integration with virtual communities," *HICSS '03: Proceedings of the 36th Hawaií International Conference on System Sciences*, at http://www.computer.org/portal/web/csdl/doi/10.1109/HICSS.2003.1174573, accessed 23 September 2012.

Johann Füller and Kurt Matzler, 2007. "Virtual product experience and consumer participation — A chance for consumer–centred, really new products," *Technovation*, volume 27, numbers 6–7, pp. 378–387.

John Hauser, Gerard J. Tellis and Abbie Griffin, 2006. "Research on innovation: A review and agenda for marketing science," *Marketing Science*, volume 25, number 6, pp. 687–717.http://dx.doi.org/10.1287/mksc.1050.0144

Sirkka Heinonen, 2009. "Sosiaalinen media: Avauksia nettiyhteisöjen maailmaan ja vuorovaikutuksen uusiin muotoihin," at http://ffrc.utu.fi/julkaisut/e-julkaisuja/eTutu_2009-1.pdf, accessed 23 September 2012.

Eva Heiskanen and Raimo Lovio, 2007. "User knowledge in housing energy innovations," *Proceedings of the Nordic Consumer Policy Conference*; abstract at

http://www.cfsd.org.uk/conferences/tspd12/abstracts/Heiskanen_Lovio_abstract.pdf, accessed 23 September 2012.

Cornelius Herstatt and Jan Sander, 2004. “Online kundeneinbindung in den frühen innovationsphasen,” In: Cornelius Herstatt. *Produktentwicklung mit virtuellen communities: Kundenwünsche erfahren und innovationen realisieren*. Wiesbaden: Gabler.

Olaf–Heye Heyenga, 1997. *Innovationscooperation zwischen hersteller und anwender*. Hamburg: Diplomarbeiten Agentur.

Uwe Hilzenbecher, 2005. “Innovategy,” In: Ralph Berndt (editor). *Erfolgsfaktor innovation*. Berlin: Springer-Verlag, pp. 45–70.

Esther Hoffmann, 2007. “Consumer integration in sustainable product development,” *Business Strategy and the Environment*, volume 16, number 5, pp. 332–338.http://dx.doi.org/10.1002/bse.577

Esther Hoffmann, 2006. “Participatory development of climate–friendly products,” In: Karin M. Ekström and Helene Brembeck (editors). *European Advances in Consumer Research*, volume 7, pp. 237–243.

Danupol Hoonsopon and Guntalee Tuenrom, 2009. “The empirical study of the impact of product innovation factors on the performance of new products: radical and incremental product innovation,” *Business Review*, volume 12, number 2, pp. 155–162.

James Hornitzky, 2010. *Idea creation, capture and management for innovation: Building a practical idea management framework*. Saarbrücken: VDM Verlag D. Müller.

Gregor Jawecki, Johann Füller and Johannes Gebauer, 2009. “A comparison of creative behaviors in online companies across cultures,” *Creativity and Innovation Management*, volume 20, number 3, pp. 144–156.http://dx.doi.org/10.1111/j.1467-8691.2011.00608.x

Axel Johne, 1994. “Listening to the voice of the market,” *International Marketing Review*, volume 11, number 1, pp. 47–59.http://dx.doi.org/10.1108/02651339410057518

Jari Kettunen, Sanna–Kaisa Ilomäki and Petri Kalliokoski, 2008. *Making sense of innovation management*. Helsinki: Teknologiainfo Teknova.

Amy Jo Kim, 2000. *Community building on the Web*. Berkeley, Calif.: Peachpit Press.

Peter Koen, Greg Ajamian, Robert Burkant, Allan Clamen, Jeffrey Davidson, Robb D’Amore, Claudia Elkins, Kathy Herald, Michael Incorvia, Albert Johnson, Robin Karol, Rebecca Seibert, Alexandar Slavejkov and Klaus Wagner, 2001. “Providing clarity and a common language to the ‘Fuzzy front end’,” *Research Technology Management*, volume 44, number 2, pp. 56–55.

Miia Kosonen, 2008. “Knowledge sharing in virtual communities,” *Acta Universitatis Lappeenrantaensis*, 335, thesis for the degree of Doctor of Science at Lappeenranta University of Technology, Lappeenranta, Finland.

Paolo Legrenzi, 2005. “Creativity and innovation,” at http://www.iuav.it/ricerca1/dipartimen/dadi/working-pa/wp_2007_02.pdf, accessed 8 June 2010.

Christian Lüthje, 2004. “Characteristics of innovating users in a consumer goods field: An empirical study of sport–related product consumers,” *Technovation*, volume 24, number 9, pp. 683–695.http://dx.doi.org/10.1016/S0166-4972(02)00150-5

Piia Mustonen, 2009. “Social media — A new way to success?” *Turku School Economics*, series KR–1, at http://info.tse.fi/julkaisut/kr/Kre1_2009.pdf, accessed 23 September 2012.

C.K. Prahalad and Venkat Ramaswamy, 2004. *The future of competition: Co–creating unique value with consumers*. Boston: Harvard Business School Press.

Emanuela Prandelli, Mohanbir Swahney and Gianmario Verona, 2008. *Collaborating with consumers to innovate: Conceiving and marketing products in the networking age*. Cheltenham: Edward Elgar.

Gilad Ravid and Sheizaf Rafaeli, 2004. “Asynchronous discussion groups as small world and scale free networks,” *First Monday*, volume 9, number 9, at http://firstmonday.org/article/view/1170/1090, accessed 15 September 2009.

Sybille V. Reichart, 2002. *Kundenorientierung im innovationsprozess: Die erfolgreiche integration von kunden in den frühen phasen der produktentwicklung*. Wiesbaden: Deutscher Universitäts–Verlag.

Ralf Reichwald, Anton Meyer, Marc Engelmann and Dominik Walcher, 2007. *Der kunde als innovationspartner: Konsumenten integrieren, flop–raten reduzieren, angebote verbessern*. Wiesbaden: Gabler.

Thomas S. Robertson, 1971. *Innovative behavior and communication*. New York: Holt, Rinehart and Winston.

Everett M. Rogers, 2003. *Diffusion of innovations*. Fifth edition. New York: Free Press.

Harald Rohracher, 2005. *User involvement in innovation processes: Strategies and limitations from a socio–technical perspective*. Munich: Profil Verlag.

Mohanbir Sawhney, Gianmario Verona and Emanuela Prandelli, 2005. “Collaborating to create: the Internet as a platform for consumer engagement in product innovation,” *Journal of Interactive Marketing*, volume 19, number 4, pp. 4–17.http://dx.doi.org/10.1002/dir.20046

Melissa A. Schilling, 2008. *Strategic management of technological innovation*. Second edition. Boston : McGraw–Hill/Irwin.

David Meerman Scott, 2007. *The new rules of marketing and PR: How to use news releases, blogs, podcasting, viral marketing & online media to reach buyers directly*. Hoboken, N.J.: Wiley.

Patricia B. Seybold, 2006. *Outside innovation: How your consumers will co-design your company's future*. New York: Collins.

Florian Skiba and Cornelius Herstatt, 2008. "Integration of innovative users as source of service innovations," *Hamburg University of Technology (TUHH), Institute for Technology and Innovation Management,Working paper*, number 54, at http://www.tu-harburg.de/tim/downloads/arbeitspapiere/Arbeitspapier_54.pdf,Accessed 26 June 2010.

Jan Henrik Soll, 2006. *Ideengenerierung mit konsumenten in Internet*. *Betriebswirtschaftslehre für Technologie und Innovation*, volume 55. Wiesbaden: Deutscher Universitäts–Verlag.

Teresa Valerie Tinz, 2007. "Spitzenprodukte durch spitzensportler? Kooperative produktentwicklung bei sportartikeln," Zürich: Dissertation der Wirtschaftswissenschaftlichen Fakultät der Universität Zürich.

Paul Trott, 2005. *Innovation management and new product development*. Third edition. Harlow, England: *Financial Times* Prentice Hall.

Anthony W. Ulwick, 2005. *What consumers want: Using outcome–driven innovation to create breakthrough products and services*. New York: McGraw–Hill.

Glen L. Urban and John R. Hauser, 1993. *Design and marketing of new products*. Second edition. Englewood Cliffs, N.J.: Prentice Hall.

Glen L. Urban and Eric von Hippel, 1988. "Lead user analyses for the development of new industrial products," *Management Science*, volume 34, number 5, pp. 569–582.http://dx.doi.org/10.1287/mnsc.34.5.569

Veerle Van Rompaey, Bart Hemmeryckx–Deleersnijder, Bart Van Der Meersche, Hans De Mondt and Marc Godon, 2005. "Beyond marketing: Applying qualitative user experience techniques on social media application," at http://jokamajo.org/files/encompas.research.design.pdf, accessed 1 December 2010.

Gianmario Verona, Emanuela Prandelli and Mohanbir Sawhney, 2006. "Innovation and virtual environments: Towards virtual knowledge brokers," *Organization Studies*, volume 27, number 6, pp. 765–788.http://dx.doi.org/10.1177/0170840606061073

Birgit Verworn and Cornelius Herstatt, 1999. "Approaches to the 'fuzzy front end' of innovation," *Arbeitspapier*, number 2, at http://www.tu-harburg.de/tim/downloads/arbeitspapiere/Arbeitspapier_2.pdf, accessed 26 June 2010.

Christopher Vollmer and Geoffrey Precourt, 2008. *Always on: Advertising, marketing and media in a era of consumer control*. New York: McGraw–Hill.

Eric von Hippel, 2001. "Innovation by user communities: Learning from open–source software," *MIT Sloan Management Review*, volume 42, number 4, pp. 82–86.

Eric von Hippel, 1982. "Appropriability of innovation benefit as a predictor of the source of innovation," *Research Policy*, volume 11, number 2, pp. 95–115.http://dx.doi.org/10.1016/0048-7333(82)90037-3

Eric von Hippel and Ralph Katz, 2002. “Shifting innovation to users via toolkits,” *Management Science*, volume 48, number 7, pp. 821–833.http://dx.doi.org/10.1287/mnsc.48.7.821.2817

Larry Weber, 2009. *Marketing to the social Web: How digital consumer communities build your business*. Second edition. Hoboken, N.J.: Wiley.

Christoph H. Wecht, 2005. “Frühe active kundenintegration in den innovationsprozess,” dissertation der Universität St. Gallen.

Gunther Wobser, 2003. *Produktentwicklung in kooperation mit anwendern: Einsatzmöglichkeiten des Internets*. Wiesbaden: Deutscher Universitäts–Verlag.

Billie Joe Zirger and Modesto A. Maidique, 1990. “A model of new product development: An empirical test,” *Management Science*, volume 36, number 7, pp. 867-883.http://dx.doi.org/10.1287/mnsc.36.7.867

Forums	Amount of discussions	Analysed period
Fillarifoorumi	49	11/2003-10/2010
Kiloklubi	36	5/2006-10/2010
Lenkkivihko	3	5/2007-10/2010
Nojatuolifoorumi	1	3/2006-10/2010
Potku.net	1	2/2007-10/2010
Suomi 24.fi	28	11/2003-10/2010
Suunto TC1	28	1/2006-10/2010
Suunto TC3	298	1/2006-10/2010
Suunto TC4	268	1/2006-10/2010
Suunto TC6	479	1/2006-10/2010
Suunto Software	215	1/2006-10/2010
Suunto Smartbelt	60	1/2006-10/2010
Suunto Sports	30	1/2006-10/2010
Suunto Team pod	9	1/2006-10/2010
suunto bike pod	26	1/2006-10/2010
Suunto cadence pod	8	1/2006-10/2010
Suunto comfort belt	24	1/2006-10/2010
Suunto diving- freediving	10	1/2006-10/2010
Suunto diving- scubadiving	29	1/2006-10/2010
Suunto diving products	162	1/2006-10/2010
Suunto diving software	91	1/2006-10/2010
Suunto foot pod	73	1/2006-10/2010
Suunto GPS pod	78	1/2006-10/2010
Suunto outdoor products	89	1/2006-10/2010
Suunto outdoor software	11	1/2006-10/2010
Suunto outdoor sports	1	1/2006-10/2010
Suunto PC pod	53	1/2006-10/2010
Suunto road bike pod	27	1/2006-10/2010

Appendix: List of discussion forums analyzed.

Article 2

Haavisto, Piia (2014) Observing discussion forums and product innovation – a way to create consumer value? Case heart-rate monitors, Technovation 34 (4), 215-222.

Technovation 34 (2014) 215–222

Contents lists available at ScienceDirect

Technovation

journal homepage: www.elsevier.com/locate/technovation

Observing discussion forums and product innovation – A way to create consumer value? Case heart-rate monitors

Piia Haavisto

Laurea University of Applied Sciences, Hyvinkää, Finland

ARTICLE INFO

Available online 3 January 2014

Keywords:
Product innovation
Discussion forums
Social media
Consumer value

ABSTRACT

This paper demonstrates how discussion forums can be used in product innovation to create value with consumers. The literature shows the value of sport addicts and hobbyists as innovators in product innovation, consequently this study is also related and relevant to sports activities. It is an empirical study based on substantial qualitative data collected from 28 discussion forums, of which 20 of the longest discussions were chosen for qualitative analysis. This paper complements the academic literature by providing information about consumer value creation in discussion forums without company interaction. The discussions contain basic, performance and excitement factors, of which performance factors are the most abundant. Both product improvement ideas and consumers eager to participate in innovation can be found in the discussions. A key to success for a company is a systematic plan showing the potential use of the extensive information in the discussions. This paper introduces closed company innovative forums which are maintained or product innovation evangelists to direct the discussion and keep consumers interested in participation. This is a new means to find out and further develop promising ideas for product innovation with consumers.

1. Introduction

The purpose of this paper is to study the possibility to use discussion forums for idea creation in product innovation and create value together with consumers in them. The main competitive issue for companies relies on better understanding of consumers' needs and preferences in order to create superior value proposition for them: the best way is to create value together with consumers, deciding together what is important to improve. There are many definitions for consumer value, but this paper relies on Füller and Matzler's, 2008 definition of consumer value consisting of basic factors, performance factors and excitement factors as it has been successfully used in their studies related to online product innovation and consumer satisfaction (Füller 2010; Füller and Matzler, 2008; Füller et al. 2006, 2009; Gebauer et al. 2012).

Discussion forums, that are the interest of this study, are used today for many purposes, mainly for information search and communication. They differ with their form, most of them being open for registered members only, although there are many different variations. Discussion forums, also called online communities or online forums, can be classified by both a strong need for social commitment and a strong need for sharing information (Mustonen, 2009). It is, indeed, typical to visit the interesting forum not only once, but regularly, but only if the discussion is of deep most interest. This is the challenge that companies face in product innovation with these forums: how to find the best participants, and, especially, have them come back over and over again.

As discussion forums are typically full of opinions, wishes and experiences of product use, this paper aims at finding out, if these comments could give valuable insight into consumers' minds and thus reveal to the company, what factors consumers value would like to see in the products. Product innovation is a process, and although this study concentrates only on the idea creation stage, it is questionable if a single consumer idea could be the beginning of a product improvement. In case such ideas exist, they need to be tested among other participants, discussed more and carefully considered. Here discussion forums can be a valuable resource, as they offer an extremely fast answer to any reasonable question asked, if the right persons participate. However, in order to gain reliable results and ensure the smooth process, chosen consumers should be integrated into the process, planned by the company in question. Discussion forums are easy to use, as no special applications or skills are needed, and the main idea is just to share thoughts in order to solve presented problems. Discussions consist of threads of comments that are usually free for everyone to see and join. Typically there are both very active participants and those who visit the forum just once.

Product innovation is interpreted here as the development of a new product (Trott, 2005) and it is seen as a result from improvements that are made to existing products (Ulwick,

E-mail address: piia.haavisto@laurea.fi

0166-4972/$ - see front matter © 2013 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.technovation.2013.12.001

2005). This study concentrates on incremental product innovation at the idea generation stage, that can rely on continuous improvements to products or to products that have minor changes in attributes in the consumers' perspective (Hoonsopon and Tuenrom, 2009; Schilling, 2008) and might not be particularly new or exceptional; it might have been previously known to the firm or industry, and involve only a minor or adjustment to the existing practices (Schilling, 2008). At the early stages of the product innovation process it is necessary to generate as many ideas at first as possible or to create very different ideas (Urban and Hauser, 1993) and here discussion forums can be an excellent source. As discussion forums typically offer large amounts of unstructured and undirected communication that contain product improvement ideas, they are a relevant source for incremental product innovation. To maintain a long discussion on one topic only is a challenge and company intervention certainly needed in some form if the aim is to get the most out of the discussions.

Certain themes in online product innovation have raised interest among researchers: consumer integration into product innovation process (Fuchs and Schreier, 2012; Lüthje et al., 2006; Dahan and Hauser, 2002), crowdsourcing (Poetz and Schreier, 2012), toolkits (Füller et al. 2006, 2009), online communities (Jawecki et al., 2009; Füller et al., 2006; Pitta and Fowler, 2005; Füller, 2010; Füller and Matzler, 2007; Gebauer et al., 2012; Mc.Alexander et al., 2002; Marchi et al., 2011), effects of virtual word of mouth in innovation (Kawakami et al., 2013), virtual design competitions (Füller et al., 2011) and virtual worlds (Kohler and Matzler, 2010; Chandra and Leenders, 2012). A link to this study was also discovered in pedagogical studies, where the content analyzing techniques in discussion forums (e.g. Dringus and Ellis, 2005) and the role of the instructor (e.g. Mazzolini and Maddison, 2005) in relation to the relevance of the discussions were studied.

The possible existence of basic-, excitement- and performance factors and their content will be studied in this paper through 28 selected discussion forums, of which 20 longest discussions (threads) have been chosen for further analysis. Is it possible to find out relevant unmet consumer needs for product innovation ideas simply by observing the discussions? Are there any crucial differences when using general discussion forums in which all possible themes are discussed or should a company maintain a discussion forum of its own?

2. Creating consumer value in discussion forums

A crucial competitive factor for companies is the ability to create consumer value by understanding consumer' needs and preferences. This is a challenge for companies, as they first need to develop a clear understanding of what aspects the consumer value (Moon et al., 2013). Consumer value has many definitions and dimensions: e.g. physical features, quality and durability, service and convenience, experience and trust, emotional appeal and cost (Carlson and Wilmot, 2006). These factors can indeed be found in discussion forums and as innovations emerge from a combination of new ideas and an understanding of important unmet consumer and market needs, the dialog in forums can give a company valuable insight into consumer preferences and unmet market needs.

Carlson and Wilmot (2006) define the elements of consumer value as consumer value being the benefits reduced by the costs. On the other hand consumer value can be defined as a value factor being the benefits divided by costs if the question lies in the comparative value of the worth with the costs caused (Carlson and Wilmot, 2006). More concretely, Cagan and Vogel (2002) describe seven opportunities to create value, these are; emotion, esthetics, identity, ergonomics, impact, core technology and quality, emphasizing that each of these opportunities contributes to the overall experience of the product and relate to the value characteristics of useful, usable and desirable. This is differentiating the product from the competition in the way that the consumer wants. If these elements can be found in the forums, the company benefits are inarguable: Discussion forums are undeniable cheap as the cost of establishing and maintaining them are low, and observing general discussion forums itself totally free of charge.

Of the value characteristics, usability is important, but it is not enough on its own to guarantee a product's success with consumers as Battarbee and Koskinen (2005) indicate, it is consumer expectations that matter as well. It needs to be remembered, however, that consumer expectations and preferences may change over time, when product experience and learning increase, as an innovative product tends to have uncertain benefits and requires consumers to learn new behaviors (Bohlman et al., 2013). Consumer expectations can be grouped into three categories: basic factors, performance factors and excitement factors (Füller and Matzler, 2008). Basic factors are the minimum requirements that the consumers do not usually remember to voice and that are noticed only, when not fulfilled. Basic factors are often regarded as a "must" (e.g. cleanliness, friendly service) and thus do not lead to consumer satisfaction in any case. Excitement factors are unexpected and surprisingly pleasant to consumers, and will be appreciated, but as unexpected not missed. Excitement factors are often related to high product novelty or exceptional entertainment. Performance factors are related to those product or service attributes that increase overall satisfaction when performance improves, such as functions in heart rate monitors that enable more efficient training. Out of these factors, performance factors lead to satisfaction if performance is high and to dissatisfaction if performance if low. (Füller and Matzler, 2008). In this paper consumer value is understood in a similar way to that of Füller and Matzler's definition: basic factors, performance factors and excitement factors, as it has been inarguably successfully used in several successful studies concentrating on product innovation and consumer participation in online forums (Füller, 2010; Füller and Matzler, 2008; Füller et al. 2006, 2009; Gebauer et al. 2012).

In addition to the consumer experiences related to a product, it is crucial to remember that the experience of participation and creating together is the very basis of the consumer value (Prahalad and Ramaswamy, 2004), and its role has definitely grown due to the new social media era: Today, the Internet allows companies to easily involve consumers into the whole innovation process (Prandelli et al., 2008), meaning that the consumers are increasingly engaged in the process of both creating and defining value (Prahalad and Ramaswamy, 2004), including value deriving from gaining acceptance and approval from other participants and company representatives (Sicilia and Ruiz, 2010). If consumers become active participants in creating value for companies, they will demand more information about potential risks of goods and services (Prahalad and Ramaswamy, 2004) and want to see their contribution valued. In result they will give their expertise and time freely to improve the product in question. Compared to traditional methods of finding product innovation ideas, the discussion forums definitely offer an extensive source to find out unmet customer and market needs, as well as new technical and business ideas. However, it is challenging to develop an engagement and contribution culture with the consumers (Tickle et al., 2011). This study shows that technical ideas with abundance to performance factors are especially easy to recognize in discussions. The literature shows that the performance factors are the ones causing the most satisfaction or dissatisfaction, and this was noticed as well in these discussions. To proceed from ideas to successful new products, time and company participation in some form is however required.

Thus, the ultimate goal of the consumer integration process is to create consumer value. The challenge lies in establishing

a process of value creation through personalized interactions that are meaningful and important to a specific individual consumer (Prahalad and Ramaswamy, 2004).This can be easily established in discussion forums, if handled in the right way keeping the future actions also in mind: Consumers' interest to actively participate in product innovation activities is influenced by their previous experiences in the area: positive experiences and successful results are crucial in stimulating future interest in creating consumer value (Kohler et al., 2010). In addition to positive experiences and results received, the value created for consumers lies also in being part of the community (Dahlander et al., 2008) and the extent to which the communication in discussion forums offer cognitive as well as social and personal integrative benefits shape the actual participation (Prahalad and Ramaswamy, 2003).

Certainly, consumers only want to participate in creating value, if they find the process rewarding (Füller, 2010). However, on the other hand Kotro et al. (2010) found out that passionate consumers and users in sports industry have been easy to involve in the product innovation process and even the process itself may create passionate consumers. However, discussion forums make it difficult for a company to steer the direction of the discussion and even the innovation process, as consumers can work wherever they choose, and interact with whom they want (Dahlander and Wallin, 2006). Consumer's feelings about the process and their beliefs about the expected results influence remarkably their interest in participation in discussion forums (Prahalad and Ramaswamy, 2003). It is also very easy for participants to decide any moment that they are not interested in participation any more. Consequently, ensuring a rewarding process and finding the right participants among the masses is crucial for the efficiency.

Passionate consumers, enthusiastic hobbyists or sports addicts, also called in literature as lead-users, are usually actively searching for a solution to their needs, are thus eager to innovate and are currently experiencing needs that will later be experienced by many users in that marketplace (von Hippel, 1986; Urban and von Hippel, 1988). The innovation potential and motivation of lead users is essentially higher than normal users (Herstatt et al., 2004; von Hippel, 1986, 1988) and they usually expect economic or personal benefits from innovation activities at least in a form of improved products (von Hippel 2007). As lead users are often trying to find a solution to their problem, they are found to come up with commercially attractive user innovations and have been shown to be a highly promising source of innovation for new product development tasks (Schreier and Prügl, 2008; von Hippel, 2001; Ernst, 2004). In discussion forums the lead users are easy to distinguish, as their regular comments show deep expertise and dedication to the matter.

Discussions between consumers can offer companies valuable insights of consumer preferences, values, habits, motives, emotions and needs (Rossi, 2011), but company participation can be challenging. Consumers prefer to express their displeasure to an individual person within their own peer group, not to a company representative (Bilgram et al., 2008), but perhaps this is typical of human behavior as a whole. The comments themselves range from product improvement ideas to feelings and user experiences, often at rapid speed. Co-creating value with consumers online requires continuous learning by the company, how to react to the options and features suggested and analyzing, how these suggestions if realized might be of more value to consumers. In that sense, integrating consumers in the innovation process requires a dramatic shift in the perspective of value creation, a point made incisively by Berger and Piller (2003).

Although the use of consumer information can give product innovation ideas or reduce market uncertainty (Herstatt et al., 2004), pure listening to consumers is considered a weak form of consumer integration, and even interaction with advanced consumers online is only a moderate form of consumer integration (Jeppesen, 2005). Although companies can listen to discussions and become aware of possible future trends, verification of these assumptions might require more market research (Pitta and Fowler, 2005) or more active participation in the discussions. Consumers in the discussions are open to interaction and eager to share opinions and expertise with changing participants, however they are usually quite fragile and sometimes even hostile towards efforts to manage or influence them by company representatives. If company involvement is done carefully and in a planned way, it can, however, offer benefits to the company (Pitta and Fowler, 2005). However, most online discussion participants have relatively advanced technological skills, therefore the companies should not expect them to find out, who stands behind an anonymous user account (Kaplan and Haenlein, 2009).

The development of technologies has created many possibilities for companies, and ideas generated through online consumer integration probably mirror consumer needs (Hoyer et al., 2010). Discussion forums allow consumers to interact and share information and at the same time remain anonymous (Bilgram et al., 2008), but comments are not separate entities, and therefore discussions should be analyzed as a whole: contributions as a whole in the online discussion process cannot be ignored (Dringus and Ellis, 2005). One discussion can consist of hundreds of comments, span several weeks if not months, and include many types and styles of contribution, therefore the role of a certain participant might not be clear. Another problem faced by the researcher is the huge amount of information, of which most is irrelevant. In addition, Dringus and Ellis (2005) point out that the researcher might have problems with processing the data into meaningful information for product innovation use. Therefore it is essential that company professionals participate in the discussions and can thus maximize the amount of relevant information.

It is clear from the literature that to create consumer value, consumer experiences and opinions need to be studied. A virtual environment forms a specific background for the theme as well as certainly offering an efficient way to find out consumer preferences and needs. Traditionally, consumer value research has been concentrating more on focus groups, panels and surveys, and due to their newness, less research has been made on online environments. It is, however, at least partly, if not totally, the way for the future; therefore this study is also based on previous studies related to online communities and consumer value creation in them (Füller 2010; Füller and Matzler, 2008; Füller et al. 2006, 2009).

3. Empirical study and findings

The empirical material consists of discussions gathered and studied by content analysis method from 28 different discussion forums in which discussions are related to heart rate monitors. The academic literature (e.g. Jawecki et al., 2009; Jeppesen, 2005; Lüthje, 2000; Lüthje et al., 2006) showed the importance of sport addicts and hobbyists in product innovation they being said to be the most eager and interested innovators. The findings of this study support this: The most popular Finnish discussion forum (www.suomi24.fi) was read through and sports were the most discussed topic there with Suunto (Suunto is a company specialising in design and innovation for sports watches, dive computers and instruments used by adventure seekers (www.suunto.com)). heart rate monitors causing the most discussions. Additionally, five sports related discussion forums (www.fillarifoorumi.fi, www.kiloklubi.fi, www.lenkkivihko.fi, www.nojatuolifoorumi.fi, www.potku.net) were read through and compared to Suunto's own forums as the aim was to compare general and company maintained discussion forums. In total discussions of 28 discussion forums have been read through,

copied to Word and categorized in Excel by the content analysis method. To be able to analyze the differences and similarities in the discussions, only one product, heart-rate monitors (and other equipment related to their use) was studied in this paper.

As most of the discussions are very short and also because of the excessive amount of material, the 20 longest discussions were chosen for further analyzing: 10 from Suunto's discussion forums and 10 from the general. This solution was made in order to find out if there are any crucial differences between these forums and the possibility to use them in product innovation, as it was noticed, when reading these discussions that the level of the discussions was more professional and knowledgeable in Suunto's discussions. A table in Excel was filled from each discussion and each comment separately. It would, indeed, be easier and cheaper for companies to use general discussion forums open for anyone in Internet, but are they as good as company's own forums?

The discussions were transferred to NVivo qualitative research software and suitable words, sentences or longer texts when found were added to basic factors, performance factors and excitement factors. In addition the comments of a so-called social media evangelist (a trainer that Suunto had hired to give advice in the discussions) and the moderator were searched from the Suunto-discussions.

As presented in Tables 1 and 2, the discussions definitely contain basic, excitement and performance factors, of which the performance factors build the majority. Although the basic functioning of a heart rate monitor can be regarded as a basic factor and prerequisite, the factors listed under performance factors mean something more. It becomes obvious from the whole comments or conversation that more than the basic functions are required. It can be clearly noticed who are the lead-users that are very keen on sports and would like to see many additional features in the equipment. They have extensive knowledge both about the use of the equipment and its technical characteristics, and creating an improved product would certainly bring them additional value, as it would help them to improve their training. As noticed in Table 1, especially in Suunto's discussions the accuracy of the training results would bring a lot of additional value, as it is one of the most discussed topics in the threads.

Compared to Suunto's discussions, the discussions in general discussion forums are less specific and goal-oriented. As presented in Table 2, the performance factors relate more to training itself and what can be done with the equipment: good for biking, cannot be used in skiing. Similarly with Suunto's discussions, most of the factors are mentioned in a negative meaning: something not functioning or not being possible.

In general discussion forums the opinions and comments are typically more abstract than in Suunto's discussions and it is more difficult to see, how exactly the product should be improved. Comments, such as “there are some disturbances with the HRMs”, “I've had problems with the efficiency”, “the measurements are not accurate” or “I've had a lot of trouble with the GPS-pod”. The problem is stated, but there are never attached Excel-tables with calculations and measurements from several training sessions and questions, how to correct the inaccuracies or answers with links to a solution someone has calculated for that question. In Suunto's

Table 1
Basic, excitement, and performance factors found in Suunto's discussions.

Basic factor/excitement factor/performance factor	Theme	Cause for satisfaction/dissatisfaction	Positive/negative meaning
Basic factors	Quality (incl. broken parts)	Maintenance annoying	–
		Quality of the belt is poor	–
		Plastic components fail, unreliable products	–
		Batteries poor (4)	–
		Customizable screen info good	+
	Design and use	Comfortable to wear	+
		Easy to secure	+
		Plastic glass looks crappy	–
Excitement factors	Training	Getting coach integrated into STraM excellent	+
		The autopause feature to stop recording at low speed	+
		In interval training lap number is shown	+
		Coach in PC, not in HRM	+
Performance factors	Training results	Accurate results (19) unreliable results or error	+
		Rate high (26)	–
		Problems in training results filtering	–
		More complicated measurements required (19)	–
		Easier measurements wanted (2)	–
		Measurements good (2)	+
		To copy existing routes and resave not possible	–
		Batteries and their type causing inaccurate results	–
		Battery replacement possible while training	+
		Impossible to scientifically estimate recovery days	–
		Should be able to add extra logs	–
		More training information needed (5)	–
		Possibility to turn off the R-R-recording needed	–
		Coach function missing (2)	–
		Coach function poor	–
	Connection between devices and software	Attachment cradle that activates itself good (2)	+
		Hard for devices to read the results and connect (20)	–
		Connection between devices fine	+
		Software and HRM fine (4)	–
		Not possible to download to Mac (4)	+
		Virtual platform should be planned (2)	+
		Export with Suunto training manager impossible	–
		Hardware incompatibility and driver problems	–
		Export features for data sharing missing	–
		Back light unnecessary while running (2)	–

Table 2
Basic, excitement and performance factors in general discussions.

Basic factor/excitement factor/performance factor	Theme	Cause for satisfaction/dissatisfaction	Positive/negative meaning
Basic factors	Quality (incl. broken parts)	Weak mechanics (2)	−
		Constant maintenance (5)	−
		All the parts are falling	−
		g-Sensors problematic	−
		GPS not working	−
		Bad battery solution	−
		Belts flexible	+
		Belts not durable (2)	−
	Design and use	Good design (1) and actively developed (1)	+
		Material and style not good (4)	−
		Material good	+
		Difficult to attach	−
		Lock practical	+
		Manual miserable	−
		Information given is accurate	+
		Sound is too low for use (1) or irritating (2)	−
		Data transfer possibility good	+
Excitement factors	Software and style	Possibility to transfer to PC	+
		Possibility to save the route	+
		A steel design really appreciated	+
Performance factors	Training	More recorded trainings needed (2)	−
		Cannot use when skiing or running	−
		Accurate results (5)	+
		A lot of measurements possible at the same time (6)	+
		Not enough measurements possible (6)	−
		Inaccurate results (29)	−
		Training “eats” a lot of batteries (9)	−
		Coach is really nice in training	+
		Coach is not usable	−
		Really good in biking (1), easy to attach (1)	+
		Separate training program with a possibility to tailor if needed	−
		Infra red reader nice when training	+
		Training load impossible to see	−
		Possibility to modify the training schemes needed (2)	−
		Easy to train in water	+
		Problems when exercising in water	−
	Connection between devices and software	Problems with connections (18)	−
		Impossible to change batteries	−
		Data transfer causes problems (2)	−
		Data transfer reliable and easy (3)	+
		Data transfer possibility needed (2)	−
		No connection to Mac	−
		Saving storage capacity too small (2)	−
		Transfer into Google maps needed	−
		Sounds when training (2)	−
		Starts slowly (4)	−
		Should be able to change information to map programmes	−
		Good connections, devices working fine together (2)	+

Table 3
Amount of questions, comments and changing of themes in the discussions.

Content	Suunto discussion forums	General discussion forums
Amount of postings	667[a]	1001[a]
Starting of a new theme	32	132
Questions	576	809
Comments	126	235

[a] One posting can contain both a comment and a question.

discussion forums most of the questions are more concrete, for instance “I was wondering on how to best use the following functions…” which follows as a half page long detailed list in relation to HR limits, speed limits, laps, warm up, cool down and interval training. The answers are long as well, including attached charts and Excel-tables full of figures. This discussion, as an example, consisting of a question and 68 comments gives very detailed information, what really interests consumers about the training: error rates (less than 1%), parameters, possible values, recovery period, and activity classes.

In Suunto's forums the comments were more accurate, such as “I want to save the activity class for every exercise, but it doesn't save the AC for single moves, only takes the current one, so I cannot see how my AC changed over time”, “I'd like to be able to connect my T6d to Movescount on my MBP, and to see a coaching feature where you could follow schedule”, I'm setting the EPOC peak to 90, HR comes to 143 and timing is one hour… What am I doing wrong?” or “Suunto could build a gadget that on the other end is connected to wrist-top and on the other end speaks Bluetooth. This software could be kind of SDK to give software developers a possibility to build whatever applications they wish” or “It is a problem that you can't set your activity class above 7, you can change HR zones, but not the MET value.” Error rate is certainly one hot topic in the discussions, causing a lot of distress (even under 1%), and long comments with calculations (charts) for possible reasons.

The general tone of discussions in all forums was positive. On average 74% of the comments were positive, and there were only

small differences between Suunto's discussion forums and general discussion forums. However among Suunto's discussions, there were some exceptions with a remarkably negative tone. These discussions were related to a new product after its launch (50% of the comments negative), and to two software discussions (only 30% of the comments were positive). These comments, such as "I've been waiting for a year, I'm getting fed up", "I'll buy Polar, so many things are not working with Suunto" and "it's a strategic mistake from Suunto" are common at the beginning of the discussion and as there are no comments from Suunto, the participants get frustrated and the tone of the discussion becomes even more negative:" I'll start telling people to buy Polar", "why isn't Suunto reacting… 6000 views here", "that's the point: we want Suunto to listen, they are too busy". Here, a so-called social media evangelist would be needed, as he would direct the discussion towards more positive tones and relevant contents. The evangelists would also be needed for another reason. With discussion forums consumers can decide, where to participate, when and what to work with very easily. This, and the rapid speed of interaction make it challenging for companies to direct the conversations. Firstly, company participation is not appreciated as such, but the conversation is rather held with individuals, and secondly, participation would mean constant presence in chosen discussion forums. Too much participation by the instructor or company representative can have the effect of reducing the amount of interaction among the discussion participants (Paloff and Pratt, 2001; Levitch and Milheim, 2003). However, on the other hand, company participation is at some points clearly expected, even demanded. It is thus important not to respond to every post and to suffocate the interaction, but by determining the appropriate time to jump in, make a comment, ask a question and thus redirect the discussion (Paloff and Pratt, 2001; Levitch and Milheim, 2003). A research in educational sphere shows as well that instructors who had an active role in discussion forums not only did not stimulate the discussion, but even managed to limit the amount of discussion and the length of discussion threads (Mazzolini and Maddison, 2005).

The discussions in both Suunto's discussion forums and general discussion forums consisted mostly of comments, although most of them were started with a concrete question (14/20). There were only very small differences between the discussions, and the amount of comments varied between 70 and 80% in 19 discussions. An interesting exception was Suunto's discussion related to PC-pods, in which 43% of the content was questions. It can be explained by the very practical nature of the discussion: several participants had concrete problems with the usage of the pod as well as with software related to it. Such comments as "I cannot read the PC pod", "here, use my code to read the pod", "does Garmin record R-R-data", and "how did you find out the message ID $0 \times 3D$". Only a few performance factors are mentioned, as the discussion is mainly concentrating on comparing different codes.

Although the comments and questions in discussions both in Suunto's and general discussion forums were similar in their relative positivity and tendency towards comments rather than questions, one relevant difference was noticeable when comparing them. As presented in Table 3, in Suunto's discussions the original theme, with which the discussion was started, often remained the same until the very end of the discussion, or at least for a relatively long time. There were four discussions, in which the theme did not change at all, and although it changed in the other six, it changed only a couple of times, in the most "unstable" discussion one for nine times. Thus the percentage of the comments or questions changing the theme was low, only 5%.

In general discussion forums, however, the themes changed relatively often. Although the difference might not seem great, as their percentage is 13%, in practice it makes the discussions difficult to follow. There were no discussions, in which the theme would have stayed the same than the original theme, and in the most unstable discussion the theme changed 42 times (every fifth of the comments or questions). The amount of questions was not any higher in that particular discussion, actually, it was even lower than in other discussions in general discussion forums. The only difference to other discussions was the relatively small amount of positive comments: their amount was only 51% of the discussion.

The moderator in Suunto's discussions participated with three comments (the discussions consisted of 667 comments) only, and kept a very low profile, giving only information about the launch of a new product. In addition to a moderator, there was a training specialist participating, who commented 28 times during the discussions, always showing a positive attitude and commenting only the accuracy of the training results. This specialist was clearly appreciated and respected among the participants, although it was clear for them that he worked for Suunto. Most of the performance factors mentioned in the discussion were related to the accuracy of the training results, dissatisfaction being caused by very small inaccuracies. This was a clear difference to general discussion forums, in which the participants did not show interest in accuracy of the training results at that level.

4. Discussion

The results reveal the similarities and differences between general discussion forums in which all possible themes are discussed, and Suunto's own discussion forums related to heart rate monitors only. The discussions in both Suunto's and general discussion forums were relatively similar with their structure, but there was a noticeable difference in the content. People had similar problems, advice was given and new questions asked, but the level of the discussions was more professional in Suunto's discussions. Although there were newcomers as well, the so-called senior members were more knowledgeable and specialized in their comments, taking actively part in the discussions. The most active discussions were related to training results and their accuracy, whereas in general discussion forums, the discussions centered on buying decision and opinions about different heart-rate monitors.

Adding to the existing knowledge on online innovation e.g. (Füller 2010; Gebauer et al. 2012; Marchi et al., 2011) this study shows that it is possible to find out unmet consumer needs for product innovation ideas by simply observing the discussions. However, to be able to find the relevant ideas relatively easily, the discussions need to be somehow directed. In these discussions, the comments of the official moderator were not appreciated, but the participants interacted rather with a specialist, hired by the company to help in training related problems. It was a noticeably appreciated move from Suunto as training results was clearly one of the most discussed themes and a theme causing remarkable distress among active users. To promote innovative discussions among active users and to maintain a positive atmosphere, the role of the specialist is important here and can easily be further developed towards a product innovation evangelist, discussed in this study.

The importance of company and consumer collaboration in online forums has been acknowledged (e.g. Füller et al., 2009; Prahalad and Ramaswamy, 2004) and different interaction methods, such as toolkits (e.g. Füller et al., 2006) and virtual design competitions (Füller et al., 2011) studied, showing the importance of company and consumer interaction. Direct communication with consumers enables products to be tailored to their requirements. However, consumers might not be aware of the types of information the company needs to create valuable products. Therefore, successful

collaboration is based on interaction, a genuine discussion between company professionals and consumers.

5. Conclusions

5.1. Theoretical contribution

Product innovation in relation to value creation has not really raised any special interest among researchers (Füller et al., 2006). The extent of the literature is that it has concentrated on value coming from interaction (Woodruff, 1997), co-creating value with consumers (Ramirez, 1999) and understanding the active and interactive consumer role (Prahalad and Ramaswamy, 2004). This paper complements the overall picture by providing information about consumer value creation in discussion forums without company interaction and consequently it brings new research perspectives to it. As consumer experiences are regarded as a key to value creation (Prahalad and Ramaswamy, 2004), discussion forums offer a potential source for value creation. Furthermore, consumer value in online surroundings has previously only been studied among selected participants (Füller and Matzler, 2008), whereas this study concentrated on the existence of consumer value attributes among unselected participants. Compared to previous research (e.g. Jawecki et al., 2009; Jeppesen, 2005; Lüthje et al., 2006), this study showed sport addicts as enthusiastic innovators.

Although open innovation has been popular among researchers (e.g. Seybold, 2006; Ulwick, 2005, von Hippel, 2005), the findings of this study presented the benefits of finding the most innovative participants and creating a closed innovative forum. These voluntary experts are easy to find by following the discussions and reading the comments. Considering the comments they made and their eagerness to help others to solve problems, they most likely would be interested in participating in product development not only in idea generation, but during the whole product innovation process, for instance during idea selection, prototype testing and marketing. The most active users were not happy with the basic use of the heart rate monitors, but expected improved performance. However, it should be checked, that these ideas correspond to the wishes and needs of the right target groups. Therefore a discussion group formed on basis of the discussions is needed. It should also be emphasized that these kinds of online communities have been studied recently (Jawecki et al., 2009; Füller, 2010; Füller and Matzler, 2007, Gebauer et al., 2012) and have been found very useful in product innovation.

5.2. Practical contribution

The discussions analyzed contained basic, performance, and excitement factors, defined to create consumer value. Performance factors, that are the most critical in relation to consumer value and consumer satisfaction, were the most abundant, and thus formed a solid basis for research. Especially in Suunto's own discussion forums, the ideas for improvements were concrete and clearly stated. At this stage, they were, however, only ideas, that in the best case were commented on a couple of times. To be able to further develop them, company interaction especially in form of questions is essential. Without any company intervention discussion forums are difficult if not impossible to use for idea creation in product innovation.

Although a company maintained closed innovation forum is highlighted in this paper, open innovation in discussion forums is considered possible with the help of a so-called social media evangelist, mainly mentioned in the literature in relation to social media marketing (Dwyer, 2007). As the participants definitely value interaction with individuals, not with company professionals, company interaction can stop an interesting discussion. The role of social media evangelists in discussion forum product innovation is to maintain a positive atmosphere, keep the discussion interesting which enables the participants to come back to answer challenging questions, and to do this activity for some kind of a reward. It is easy to see who are the most enthusiastic and knowledgeable participants in discussions, as they offer professional opinions and solutions to different problems. By asking the right questions, there is a lot of expertise available for free, and the amount of concrete product improvement suggestions can be remarkably high. The discussions offer a free insight into consumers' minds and in addition to concrete suggestions the discussions show a remarkable amount of factors related to product performance. This clearly shows the level of satisfaction and dissatisfaction among the group of knowledgeable consumers. The use of social media evangelists in product innovation is certainly an interesting research topic for future research studies and something which companies need to be very much aware of.

Discussion forums can undoubtedly be used to create value for product innovation purposes, if the challenge is addressed by business in the right way. It is definitely a challenge to filter the relevant and needed information, but a company with an innovative mindset can gain substantial benefits from using the discussion forums to create value for consumers. If the consumers are kept interested in the contents of the discussions and they see the interaction as rewarding, a company can easily find out and further develop ideas for product innovation with consumers and thus directly create consumer value.

5.3. Limitations and suggestions for further research

There are several limitations in the study. Firstly, even though the study is based on extensive data, the study focuses only on discussions related to sports equipment, heart-rate monitors and other devices related to their use. Secondly, it was not possible to interact with the consumers, as the discussions had already closed (although this had taken place only recently).

This study raised several new research possibilities that were beyond the scope and boundaries of this paper. Although this paper corresponds to the previous research related to sport addicts, a comparative study with discussions related to other products is necessary, for instance related to the newest technology, such as iPads and iPhones. Secondly, more research is needed to clarify the concept and role of a product innovation evangelist.

References

Battarbee, K., Koskinen, I., 2005. Co-experience: user experience as interaction. CoDesign 1 (1), 5–18.
Berger, C., Piller, F., 2003. Customers as co-designers. IEEE Manuf. Eng. 82 (4), 42–45.
Bilgram, V., Brem, A., Voigt, K-I., 2008. User-centric innovations in new product development – Systematic identification of lead users harnessing interactive and collaborative online-tools. Int. J. Innov. Manage. 12 (3), 419–458.
Bohlman, J.D., Spanjol, J., Qualls, W.J., Rosa, J.A., 2013. The interplay of customer and product innovation dynamics: an exploratory study. J. Product Innov. Manage. 30 (2), 228–244.
Cagan, J., Vogel, C.M., 2002. Creating breakthrough products. Innovation from Product Planning to Program Approval. Pearson Education Ltd., New York.
Carlson, C.R., Wilmot, W.W., 2006. Innovation: the five disciplines for creating what customers want. Random House Inc, New York.
Chandra, Y., Leenders, M.A.A.M., 2012. User innovation and entrepreneurship in the virtual world: a study of second life residents. Technovation 32 (7–8), 464–476.
Dahan, E., Hauser, J.R., 2002. The virtual customer. J. Product Innov. Manage. 19 (5), 332–353.
Dahlander, L., Frederiksen, L., Rullani, F., 2008. Online communities and open innovation: governance and symbolic value creation. Ind. Innov. 15 (2), 115–123.
Dahlander, L., Wallin, M., 2006. A man on the inside: unlocking communities as complementary assets. Res. Policy 35 (8), 1243–1259.

Dringus, L.P., Ellis, T., 2005. Using data mining as a strategy for assessing asynchronous discussion forums. Comput. Edu. 45, 141–160.
Dwyer, P., 2007. Measuring the value of electronic word of mouth and its impact in consumer communities. J. Interact. Mark. 21 (2), 63–79.
Ernst, H., 2004. Virtual consumer integration – Maximizing the impact of consumer integration on new product performance, Cross-Functional Innovation Management. Albers & Sohns, Wiesbaden.
Fuchs, C., Schreier, M., 2012. Customer empowerment in new product development. J. Product Innov. Manage. 28 (1), 17–32.
Füller, J., 2010. Refining virtual co-creation from a consumer perspective. Calif. Manage. Rev. 52 (2), 98–122.
Füller, J., Hutter, K., Faullant, R., 2011. Why c-creation experience matters? Creative experience and its impact on the quantity and quality of creative contributions. R&D Manage. 41 (3), 259–273.
Füller, J., Mühlbacher, H., Matzler, K., Jawecki, G., 2009. Consumer empowerment through Internet-based co-creation. J. Manage. Inf. Syst. 26 (3), 71–102.
Füller, J., Matzler, K., 2008. Customer delight and market segmentation: an application of the three-factor theory of customer satisfaction on life style groups. Tour. Manage. 29 (1), 116–126.
Füller, J., Matzler, K., 2007. Virtual product experience and customer participation – A chance for customer-centered, really new products. Technovation 27 (6–7), 378–387.
Füller, J., Bartl, M., Ernst, H., Mühlbacher, H., 2006. Community based innovation: how to integrate members of virtual communities into new product development. Electron. Commer. Res. 6 (1), 57–73.
Gebauer, J., Füller, J., Pezzei, R., 2012. The dark and the right side of co-creation: triggers of member behavior in online innovation communities. J. Bus. Res. 66 (9), 1516–1527.
Herstatt, C., Verworn, B., Nagahira, A., 2004. Reducing project related uncertainty in the "fuzzy front end" of innovation – A comparison of German and Japanese product innovation projects. Int. J. Product Dev. 1 (1), 43–65.
Hoonsopon, D., Tuenrom, G., 2009. The empirical study of the impact of product innovation factors on the performance of new products: radical and incremental product innovation. Bus. Rev., Camb. 12 (2), 155–162.
Hoyer, W.D., Chandy, R., Dorotic, M., Krafft, M., Singh, S.S., 2010. Consumer cocreation in new product development. J. Serv. Res. 13 (3), 283–296.
Jawecki, G., Füller, J., Gebauer, J., 2009. A comparison of creative behaviors in online companies across cultures. In: Proceedings of 16th International Product Development Management Conference, 7–9 June, Twente, Netherlands, pp. 1–14.
Jeppesen, L.B., 2005. User toolkits for innovation: consumers support each other. J. Product Innov. Manage. 22 (4), 347–362.
Kaplan, A.M., Haenlein, M., 2009. Users of the world, unite! The challenges and opportunities of social media. Bus. Horizons 53, 59–68.
Kawakami, T., Kishiya, K., Parry, M.E., 2013. Personal word of mouth, and innovation use. J. Product Innov. Manage. 30 (1), 17–30.
Kohler, T., Matzler, K., 2010. Avatar-based Innovation: using virtual worlds for real-world innovation. Technovation 29 (6), 395–407.
Kohler, T., Fueller, J., Stieger, D., Matzler, K., 2010. Avatar-based Innovation: Consequences of the virtual co-creation experience. In: Proceedings of the 2010 43rd Hawaii International Conference on System Sciences, pp. 1–11.
Kotro, T., Repo, P., Bråtå, H.O., Hagen, S.E., Hauge, A., 2010. Consumer Contribution to Product Development in the Nordic Sports Industry. Publications of Vaasa University, Selvityksiä ja raportteja p. 163.
Levitch, S., Milheim, W., 2003. Transitioning instructor skills to the virtual classroom. Edu. Technol. 42 (2), 42–46.
Lüthje, C., 2000. Characteristics of innovating users in a consumer goods field. An Empirical Study Of Sport-Related Product Consumers. MIT Sloan Working Paper No. 4331-02 ⟨http://papers.ssrn.com/sol3/papers.cfm?abstract_id=298015⟩ (retrieved 1.12.11).
Lüthje, C., Herstatt, C., von Hippel, E., 2006. User-innovators and "local" information: the case of mountain biking. Res. Policy 34 (6), 951–965.
Marchi, G., Giachetti, C., de Gennaro, P., 2011. Extending lead-user theory to online brand communities: the case of the community Ducati. Technovation 31 (8), 350–361.
Mazzolini, M., Maddison, S., 2005. When to jump in: the role of the instructor in online discussion forums. Comput. Edu., 1–21.
McAlexander, J.H., Schouten, J.W., Koenig, H.F., 2002. Building brand community. J. Mark. 86 (1), 38–54.
Moon, H., Miller, D.R., Kim, S.H., 2013. Product design innovation and customer value: cross-cultural research in the United States and Korea. J. Product Innov. Manage. 30 (1), 31–43.
Mustonen, P., 2009. Social Media – A New Way to Success? Turku School Economics. Series KR-1:2009, Turku.
Paloff, R., Pratt, K., 2001. Lessons from the Cyberspace Classroom. The Realities of Online Teaching. Jossey-Bass, San Fransisco.
Pitta, D.A., Fowler, D., 2005. Online consumer communities and their value to new product developers. J. Product Brand Manage. 14 (5), 283–291.
Poetz, M.K., Schreier., M., 2012. The value of crowd-sourcing: can users really compete with professionals in generating new product ideas? J. Product Innov. Manage. 29 (2), 245–256.
Prahalad, C.K., Ramaswamy, V., 2004. The Future of Competition. Co-Creating Unique Value with Consumers. Harvard Business School Press, Boston.
Prahalad, C., Ramaswamy, V., 2003. The new frontier of experience innovation. MIT Sloan Manage. Rev. 44, 12–18.
Prandelli, E., Sawhney, M., Verona, G., 2008. Collaborating with Consumers to Innovate. Conceiving and Marketing Products in the Networking Age. Edward Elgar, Cheltenham.
Ramirez, R., 1999. Value co-production: intellectual origins and implications for practice and research. Strateg. Manage. J. 20 (1), 49–65.
Rossi, C., 2011. Online consumer communities, collaborative learning and innovation. Meas. Bus. Excell. 15 (3), 46–62.
Schilling, M.A., 2008. Strategic Management of Technological Innovation. McGraw Hill, New York.
Schreier, M., Prügl, R., 2008. Extending lead-user theory: antedecents and consequences of consumers' lead userness. Product Innov. Manage. 25 (4), 331–346.
Seybold, P.B., 2006. Outside innovation. How your consumers will co-design your company's future. HarpersCollins Publishers, New York.
Sicilia, M., Ruiz, S., 2010. The effects of the amount of information on cognitive responses in online purchasing tasks. Electron. Commer. Res. Appl. 9 (2), 183–191.
Tickle, M., Adebanjo, D., Michaelides, Z., 2011. Developmental approaches to B2B virtual communities. Technovation 31 (7), 296–308.
Trott, P., 2005. Innovation Management and New Product Development, Third edition Financial Times Prentice Hall, Harlow.
Ulwick, A.W., 2005. What Consumers Want. Using Outcome-Driven Innovation to Create Breakthrough Products and Services. McGrawHill, New York/London.
Urban, G.L., Hauser, J.R., 1993. Design and Marketing of New Products. Prentice Hall, New Jersey.
Urban, G., von Hippel, E., 1988. Lead user analyses for the development of new industrial products. Manage. Sci. 34 (5), 569–582.
von Hippel, E., 2007. Horizontal innovation networks – by and for users. Ind. Corp. Chang. 16 (2), 293–315.
von Hippel, E., 2005. Democratising Innovation. The MIT Press, Cambridge, England.
von Hippel, E., 2001. Innovation by user communities: learning from open-source software. MIT Sloan Manage. Rev. 42 (4), 82–86.
von Hippel, E., 1988. The Sources of Innovation. McKinsey & Company, London.
von Hippel, E., 1986. Lead users: a source of novel product concepts. Manage. Sci. 32 (7), 791–805.
Woodruff, R.B., 1997. Customer value: the next source for competitive advantage. J. Acad. Mark. Sci. 25 (2), 139–153.

Piia Haavisto is a Senior Lecturer at Laurea University of Applied Sciences, Finland. Her research interests are product innovation, social media and international business. Piia Haavisto can be contacted at piia.haavisto@laurea.fi.

Article manuscript 1

Haavisto, Piia. Consumer needs and a systematic plan – the reality of social media discussion forums

Sent to International Journal of Product Innovation 10/2012

CONSUMER NEEDS AND A SYSTEMATIC PLAN – THE REALITY OF SOCIAL MEDIA DISCUSSION FORUMS

Abstract

The purpose of this paper is to assess the possibility to use discussion forums with systematic consumer integration plan in incremental product innovation. The academic literature shows the value of sport addicts and hobbyists as innovators in product innovation; this is assessed and connected with the empirical results. This study is empirically based around qualitative material collected from 28 discussion forums related to heart rate monitors and one interview. Discussion forums can be a relevant source for incremental product innovation ideas if a clear and efficient strategy how to categorise information, participate and integrate consumers is made. In reality this is efficiently only possible in company´s own discussion forums with systematic interaction and consumer integration to discover and then further develop the consumer ideas presented in the discussions. These results can be used as guidelines and as a way of connecting consumers and product innovation by a forward thinking business.

Introduction

Social media and its many applications are among the most discussed media topics today. In everyday discussions it often means just Facebook, but other applications are becoming more and more popular all the time. Nowadays it is normal to use social media discussion forums for an information search, whether the advice needed is related to travelling, finding the right doctor or creating a solution for using a new or old technical product. There are many explanations to social media, but in short it can be best described by its nature: Internet-based applications aimed at interaction, socializing, networking and sharing information. Social media channels differ with their intensity and purpose, as some of them are meant in the first place for sharing information,

such as photos, videos and audio materials. Others emphasize the need for social commitment and relationships, thus creating networks for either personal or business use. Discussion forums, that are the interest of this study, can be described as reflecting both a strong need for social commitment and as strong a need for sharing information (Mustonen, 2009).

Companies have undoubtedly found social media promising, but so far their efforts have mainly concentrated on promotion and advertising, for instance, creating groups in Facebook and asking consumers to come and "like" either the company or the product. Social media product innovation has raised a definite interest as well, but at least so far it has been considered time-consuming and challenging.

Traditionally companies have been more interested in the later stages of the product innovation process to find out how the already recognized product opportunities could be realized, or the designed products tested and launched. The information gathered during these stages has been considered more reliable (Verworn and Herstatt, 1999), and therefore it has raised more interest among the companies. Discussion forums could, however, replace traditional focus groups and give a company much wider audience and testing environment for new product innovation ideas. They are easy to organize and need very little monitoring, but their use needs to be planned in a way that gives a company enough background information and the question to be asked is do the people monitored form the right target group? In addition, the discussion itself needs some directing as well as the monitoring has to be systematic to offer real value. In this sense, participation in social media product innovation means investment of time, but surely given todays social media prevalence its worth any business investment. The key is a systematic plan from accompany preferably with their own discussion form to truly obtain the most relevant information.

Certain themes in online product innovation have raised interest among researchers: consumer integration into product innovation process (Herstatt, 2002; Wobser 2003; Wecht, 2006; Reichart, 2002; Lüthje 2003; Lüthje et al., 2006; Ernst, 2004), consumers´ role (Reichart, 2002), management of the early stages of the product innovation process (Herstatt, 2002; Herstatt and Verworn, 2003), idea competitions (Soll, 2006), toolkits (Bartl, 2006), online communities (Herstatt and Sander, 2004; Jawecki et al., 2011; Bartl, 2006; Pitta and Fowler, 2005; Füller, 2010; Füller and Matzler, 2007; Gebauer et al., 2012; Mc.Alexander et al., 2002) and virtual worlds (Daecke, 2009; Herstatt and Sander, 2004). A link to this study was also discovered in pedagogical studies, where the content analyzing techniques in discussion forums (e.g. Dringus and Ellis, 2005) and the role of the instructor (e.g. Mazzolini and Maddison, 2005) in relation to the relevance of the discussions were studied.

In this study product innovation is understood as the development of a new product (Trott, 2005) and it is seen as a result from improvements that are made to existing products (Ulwick, 2005). This study concentrates only on incremental product innovation, that can mean continuous improvements (Hilzenbecher, 2005) or minor changes in attributes in the consumers´ perspective (Hoonsopon and Tuenrom, 2009; Schilling, 2008; Reichwald et al., 2007) and might not be particularly new or exceptional, but still offer a competitive advantage as they in some specific way answer to consumer needs better than other or earlier products. For this reason, defining consumer needs is crucial, and here discussion forums can be an extremely valuable tool. It is remarkably easier to use social media discussion forums for incremental product innovation than for developing totally new products: As most of the discussions are typically short and the theme of the discussion changes relatively often, it would be a challenge to develop totally new products in discussion forums. Still, they offer a constant flow of ideas for minor improvements and insights into consumers´ minds and level of satisfaction and complaints. It must also be remembered that today consumers look into discussion forums to find answers to their problems: active discussions with real and interesting content attract more consumers and promote a positive image of the company and its products.

The main competitive issue for companies relies on better understanding of consumers´ needs and preferences in order to create products that fit to the market. Social media discussion forums offer an extensive source of information for those companies that know how to use it. In theory, discussion forums are very easy to use, as no special technical applications or skills are required, but the rapid speed and amount of information make the process challenging: a company should create a way to get the best participants to come back and stay in the forums, i.e. to integrate them into the process. Only with a systematic plan product improvement ideas can get out of the discussions and further developed into a sensible direction.

The academic literature shows that sports addicts and hobbyists are crucial in product innovation (e.g. Jawecki et al., 2011; Jeppesen, 2003; Lüthje, 2003; Lüthje et al., 2006; Tinz, 2007) and can be a real asset to a company who can integrate their expertise in the company´s product innovation process. Their usually high level of commitment, interest and expertise can create additional value and certainly help to define unmet consumer needs and new trends in the market.

Defining consumer needs

Among product innovation researchers understanding and meeting consumer needs is regarded as a crucial success factor and a strong competitive advantage (Wecht, 2006; von Hippel, 2001; von Hippel and Katz, 2002; Zirger and Maidique, 1990; Cooper, 1994; Day et al., 1979; Hoffman, 2007; Hoffmann, 2006; Cooper and Kleinschmidt, 1986; Hauser et al., 2006; Hayenga, 1997): more specifically a key to success in product innovation is the ability to find out and understand the concrete needs and preferences of the consumers (Urban and Hauser, 1993), to find out their possible technical problems and solutions suggestions (Reichwald et al., 2007) and to identify future consumer needs for minor improvements (Soll, 2006). As these themes are prevalent in social media discussion forums, they offer a remarkable source for product innovation. Accurate and detailed information on consumers´ needs and the context of a product use (von Hippel, 2001) are essential in product innovation as well as knowledge about former experiences, expectations on how a product will be used (Rohracher, 2005) and its place on the market (Tinz, 2007; Heiskanen and Lovio, 2007). Here discussion forums definitely offer an relative alternative: they are cheap, fast, easy to manage and offer a wider range of audience. There are some challenges, though. The extensive amount of unorganized information poses a severe problem, as it is not clear, how to get the most of discussions, without wasting a lot of time in searching. This is also the reason why discussion forums have been neither studied nor used for product innovation in bigger scale: a structural approach with a clear plan and strategy would most definitely be needed.

The Internet removes the distance between consumers and companies in consumer markets (Bartl, 2006) as well as in geographical sense (Prahalad and Ramaswamy, 2004), and its fast development has offered many new possibilities for the companies. With an easy access to unprecedented amounts of information, consumers can make more informed decisions, create networks (Prahalad and Ramaswamy, 2004; Szmigin, 2003), and the companies from their part can easily get the consumers involved in the innovation process (Bartl, 2006). Here it is essential to find the best participants, those who represent the right target group and with product experience and enthusiasm to innovate. In addition, considering the consumer role is crucial: the consumers have to be seen as equal active partners, not as passive recipients of ideas. If not treated as equals, the discussion forum participants most certainly refuse their help and ideas, furthermore, the whole attempt will cause a negative effect.

Social trends, economic environment and technological advances build a background for product innovation process and help in defining possible product opportunity gaps for further evaluation. As presented in table 1, trends related to these factors indeed facilitate the product innovation process. The Internet has created many new possibilities, social media applications made the interaction fast and undependable on place and time, and social trends activate people to participate in discussions. There is, however, also the darker side as the rapid speed and new developments in social media cause serious problems to privacy and safety. Companies face the challenge of keeping up with new technologies and applications as well as ensuring the privacy and safety of both themselves and their consumers.

Table 1 Factors influencing the product innovation process

Factors	**Trends**	**Challenges to be solved**
Technological factors	Internet Web 2.0 Social media applications	Constant changes Rapid development New applications
Social trends	Social networking Interaction Socializing Search for information	Vulnerability Privacy
Economic factors (environment)	Cheap and efficient ways to promote and advertise Competitor´s advances	Efficiency Protecting competitive advantage

The role of knowledge and experience is emphasized at the early stages of the product innovation process, especially in idea generation phase (Soll, 2006) and it is regarded as an essential precondition for consumer generated high quality product and service ideas (Lüthje, 2000). To offer relevant product ideas or product improvements consumers should know the product as well as the branch to which the product is related to (Soll, 2006). The more complicated the product, the more difficult it is for the consumers to understand its functions, possibilities or to test the quality and more intense co-operation with the company professionals is needed (Hayenga, 1997). Approach to technical information makes it possible to compensate the possible lacking information of the consumers, and thus the amount of usable ideas should increase. Further information helps also the consumers to evaluate, if their ideas will be relevant for the company. (Soll, 2006.) It is

indeed a question for companies to solve, if they want to succeed with social media product innovation: successful interaction takes time, and will thus demand a significant resource.

Consumers need application knowledge that refers to practical experience with a product through intensive usage and object knowledge that is based not on practical experiences but on knowledge concerning for instance technology, procedure or material. (Lüthje, 2000; Lüthje et al., 2006), however, usually the consumers have only knowledge about using the product, but not about the product (Brockhoff, 1985). This certainly is not the case in discussion forums: at least in Suunto´s discussions so called "senior members" were very knowledgeable product experts. An important precondition for the consumer motivation for using their application knowledge is that there is a problem, new need or dissatisfaction; otherwise there would not be anything to achieve (Soll, 2006). These prerequisites are all prevalent in discussion forums and they thus can offer a remarkable source for product innovation ideas, if the interaction is planned with care. User innovators almost always utilize information already in their possession or generated by themselves to determine the need for and to develop the solutions for their innovations (Lüthje et al., 2006).

Higher complexity can, of course, lead to a situation where from application knowledge emerged ideas are not relevant because the technical functions are failing or the idea might be incorrectly evaluated (Soll, 2006). The consumer might also not be competent enough to create a complete solution to a problem from his idea (Lüthje, 2000), but consumers that participate extremely actively usually present high quality ideas (Soll, 2006). It will indeed not be possible to find relevant product innovation ideas only by observing, but active company participation and inside information from company professionals is definitely needed. Social media as well as its discussion forums mean interaction and dialogue, and therefore company participation is even required. Relevant results require resources, but to be efficient these interventions should be planned in detail**.**

Prahalad and Ramaswamy (2004) separate knowledge from information, defining knowledge, like experience, to be inherent in the individual and inseparable from him. Reichwald et al. (2007) argue that companies need two kinds of information: information about needs of the consumers and information about possible solutions. Consumer needs include consumers´ wishes, preferences and demands that a consumer has to an innovation´s functionality, efficiency, quality, design and price. Many companies do not pay enough attention to consumer needs, but concentrate more on information about solutions, which with they can utilize new technologies and competencies to create innovative products and services (Reichwald et al., 2007; Piller, 2006.) To be

successful a company needs to forge relationships with the right consumers and integrate them to the product innovation process. It is important to understand consumers´ response to innovation (Szmigin, 2003) and understand that consumers can not only be regarded as a source for information about their needs, but they can help to find solutions as well. (Reichwald et al., 2007). Within every problem the consumer has, there is potentially a solution or a more efficient way of doing things that the consumers could help to create (Szmigin, 2003) and the discussion forums are definitely full of consumer suggestions. From this perspective consumer integration could be seen as management of consumer knowledge that can be achieved only through direct interaction with the consumers (Reichwald et al., 2007). Discussion forums, indeed, offer a remarkable source for product innovation ideas with a planned approach. However, it must be realized that most consumer wishes are rather abstract at a preliminary level and need to be sorted out and further clarified together with company professionals. This can ideally be done in discussion forums, if the discussions are kept interesting enough to have the same participants to come back over and over, in other words, they will have to be integrated into the process.

Consumer integration plan and social media product innovation

Amabile et al. (1996) define creativity by individuals and teams to be the starting point for innovation, the first being a necessary, but not sufficient condition for the second. Thus, crucial in successful consumer integration is the ability to find innovative consumers (Bartl, 2006): passionate, knowledgeable consumers with clear vision and realistic attitude (Seybold, 2006). In social media it is relatively easy to find enthusiastic consumers, and they most often do not need to be looked for, but it is a real challenge to keep them. There are many other alternatives, and it is typical to participate only for a short while, unless there is something indeed very interesting and rewarding in that specific place. In Suunto´s discussions, however, some participants came back over and over again to offer their expertise to solve the problems of so-called “newbies”. This expertise most definitely has been left unutilized, but is certainly a real asset for those companies who know how to use it.

Communication between consumers and company professionals is highly important (Hoffman, 2007) as best results in product innovation are received in co-operation with professionals and consumers (von Hippel, 2007; Kristensson et al., 2004; Wobser, 2003). As its best co-operation is a result of trust, integrity and trustworthiness of the other party (Wecht, 2006), promotes sharing of accurate information (Urban and von Hippel, 1988), helps in

shaping products and reflect on them (Hoffmann and Konrad, 2007). Ulwick (2005) emphasizes that capturing consumer requirements does not mean getting consumer feedback on a product idea, concept or prototype but understanding what consumers use to determine value when getting a job done and obtaining this information in advance of evaluation project ideas and concepts. As direct communication with consumers allows firms to learn from consumers and to tailor products to their requirements (Dahan and Hauser, 2001), consumer integration can help manufacturers to get direct market information, unknown perspectives emerged from the collective creativity can be promoted as well as the innovation process shortened when consumers participate in idea selection and product testing (Tinz, 2007).

Consumer integration has played a central role in all phases of the innovation process from the idea generation to the market launch of new products (Grass, 2009): New products should provide significant value to the consumers (Zirker and Maidique, 1990) and therefore it is often recommended that consumers should be included in the product innovation process to ensure that the consumers get what they want (Mantel and Meredith, 1986; Grass, 2009) and the new product will fit the market: Consumer integration could influence not only design and diffusion, but also new purchasing and consumption practices (Ornetzeder and Rohracher, 2003). Companies have started to understand the importance of consumers as a source of learning, innovations and product improvements (Rohracher, 2005) and realized that direct communication with consumers allows them to tailor products to their requirements (Dahan and Hauser, 2001).

At the beginning of the product innovation process user innovativeness is especially important (Hirschman, 1980; Hayenga, 1997): The yet undefined consumer needs will be changed into product solutions (Lüthje, 2003) as producers integrate consumers in the idea generation process to create ideas for products with high market- and business potential (Wecht, 2006; von Hippel and Sonnack, 1999; Kristensson et al., 2004; Tinz, 2007; Lüthje, 2003). Wecht (2006) suggests asking the consumers directly for innovation ideas and Jeppesen (2005) emphasizes the importance of a dialogue in which the solution to the consumers´ problem is developed. Especially experienced users can give impulses to so called breakthrough products (Herstatt, 2002) and thus in practice it may often be the consumer who finds a solution to a certain problem (Jeppesen, 2005). At the beginning stage of the product innovation process it is important also to take part in the product innovation process even if the person in question would not be knowledgeable or experienced enough to create ideas (Soll, 2006). Discussion forums allow everyone to participate, and the attitude even to the simplest questions is

usually positive and encouraging: the main ideas are interaction and sharing of expertise, not showing one´s superiority over the others.

The extensive amount of information is, however, not the only challenge for the companies to face. Interaction with consumers can be demanding, as in social media it means communication at a very fast speed with Internet-applications that "have a long memory". An unsatisfactory answer from a company is very fast spread for tens of thousands of readers to see, and the discussions turn ugly relatively quickly, if a company does not answer to an annoying issue or if the answer is unsatisfying. As Prahalad and Ramaswamy (2004) point out, it should also be considered that the social media dialogue is conversation between two equal partners, and cannot, thus, be company-controlled. From the positive point of view, participating in discussions helps to connect with consumers at a remarkably deep level and gain valuable information into consumer satisfaction and needs (Volmer & Precourt, 2008) as well as knowledgeable solutions to problems once the company has gained the trust of the consumers (Scott, 2007). In general, the consumers in Suunto´s discussions seemed to be happy with very little company intervention, although it was in some cases (in relation to software compatibility) greatly expected, even demanded.

Consumers have different reasons for their participation in communities, such as desire for interaction, necessity to solve a certain problem or need to be socially active. By listening to the consumers, companies can find out what consumers would like to hear or talk about, and what the consumers would find interesting, enjoyable or valuable (Kaplan and Haenlein, 2009). However, overly professional content offerings should be avoided, as they might have a paralyzing or even negative effect on the conversation. Astute companies devote considerable resources to listening to the conversations, although typically consumers are not able to define clearly the desired product benefits (Pitta and Fowler, 2005). Typically, common themes in discussions are seeking of assistance in purchasing decision and searching or offering of help with the use of the purchased product (Pitta and Fowler, 2005), this was clearly noticed in the analyzed 28 discussion forums as well in addition to accurate training results. Pitta and Fowler (2005) point out that the company cannot start a discussion forum, as it would most likely not be able to attract the consumers the company would be interested in. This was definitely not the case in Suunto´s discussion forums, as the discussions were active and at a highly knowledgeable level.

Activeness in the innovation process depends on product knowledge, dissatisfaction, new needs and product involvement (Bartl, 2006). Consumer integration in innovation process means concretely finding out consumer preferences as early as possible and changing these into products and services

(Herstatt and Sander, 2004). Consumers as an external resource can significantly improve innovation process (Gassmann and Wecht, 2005) and new Internet technologies offer quick and easy possibilities to do so. The role of consumers as a source of innovation is becoming more and more important. Companies therefore engage in a lot of different activities to get closer to their consumers or involve them in their innovation processes. Companies can either decide to search for consumer preferences and consumer needs by themselves, or they can integrate the consumers into the product innovation process (Sandmeier and Wecht, 2004). In product innovation, however, the intensity, in which the consumer and producer are in contact, is a crucial success factor (Wecht, 2006).

To succeed in the consumer integration, companies need clear methods and strategies, how to involve their consumers (Soll, 2006): Which consumers should be integrated into the product innovation process, what contents should be regarded as the most relevant in the process, what methods should be used, how relevant to consumers information will be further forwarded to professionals that have no direct contact to consumers (Reichart, 2002). Successful consumer integration depends on several facts: especially innovative consumers must be found and they must be integrated to the process (Bartl, 2006), and especially passionate, knowledgeable consumers with clear vision and understanding of reality are needed (Seybold, 2006). Firms need to extent their ability to absorb consumer knowledge that lies beyond their reach and influence (Verona et al., 2006); therefore virtual consumer initiative is valued more and more. Online discussions that can be read and participated from everywhere and anytime, offer indeed a significant resource for consumer integration in incremental product innovation, if properly realized.

Results

The empirical material consists of discussions gathered and studied by content analysis method from 28 different discussion forums (see appendices A) in which discussions are related to heart rate monitors. Academic literature in relation to product innovation (e.g. Jawecki et al. 2011; Jeppesen, 2003; Lüthje, 2003; Lüthje et al. 2006; Tinz, 2007) emphasizes the importance of sport addicts and hobbyists showing their high level of commitment, interest and expertise that can all be used during the innovation process, especially to create incremental ideas. Therefore discussion forums in Finnish where sports were discussed were read through (www.fillarifoorumi.fi, www.kiloklubi.fi, www.lenkkivihko.fi, www.nojatuolifoorumi.fi, www.potku.net and www.suomi24.fi). It was noticed that the most popular topic in them were heart rate

monitors, with Suunto heart rate monitors causing the most discussions (Polar being the second). The discussions in these 28 discussion forums read through, copied to Word and categorised in Excel (see appendices B) by content analysis method and then more specifically in NVivo-programme.

The themes of the discussions were at first categorised as presented in table 2. From the total of 2.187 discussions the most discussions in all discussion forums were related to technical problems and advice. People not only state questions when they need help, but also use discussion forums as a source of information, in which to look for advice to same problems that someone else has already stated. This, in turn, makes the discussions difficult to follow, as more and more participants are joining them and offering their advice as well as asking additional questions, not always related to the topic discussed at that moment. It is also a relevant question to solve, if these consumers form the right target group or the right persons should be picked up from the mass.

Table 2 Themes categorised from the discussions

Theme	Suunto-discussions	General discussion forums	Suunto-discussions	General discussion forums
Technical problems & advice	71 %	38 %	1540	45
Efficient training & training results	18 %	28 %	386	33
Buying behaviour support	11 %	34 %	233	40
Total amount of discussions	100 %	100 %	2159	118

On the other hand, in that case company participation is expected, in some cases even demanded, and it causes a lot of dissatisfaction in case it is delayed. This was especially the case with discussions related to software problems, as the postings became very demanding, for instance: “This thread has more than 20.000 viewers, where is Suunto” or “attached is the answer I received from Suunto, they don´t really care.” Social media definitely means interaction, and in that sense using discussion forums demands a remarkable time-resource.

Most of the discussions were very short (72% consisting of maximum four comments). It is unlikely that these discussions could be used to get new ideas for product innovation, as the thoughts and ideas are not developed and discussed long enough. If a remarkable idea was presented, it could very well be taken to start another thread with a specially chosen consumers to analyse

it. The 20 longest discussions, of which 10 were from general discussion forums and 10 from Suunto´s, were chosen for deeper analysis. As the level of the discussions and expertise seemed to be much higher in Suunto´s discussions, it was assumed that company´s own discussion forums could offer more value for the company in relation to product innovation. Therefore these discussions were compared with the discussions in general discussion forums. Although the level of the discussions was inarguably more professional and knowledgeable in Suunto´s discussions, only minor differences were found when comparing the discussions with those from the general discussion forums.

As presented in table 3, there were clearly two popular themes in general discussion forums: technical problems as well as finding advice or help in the buying process. A typical question was “I am planning to buy a heart rate monitor: which one of them should I buy?” This also seems to be a theme that people want to discuss, as these discussions were typically long. In Suunto´s discussions buying decision support was not a typical theme, but technical advice and efficient training were more popular.

Table 3 Themes of the 20 longest discussions

Theme	Suunto-discussions	Other discussions	Suunto discussions in percent	General discussions in percent
Technical advice	121	258	18 %	26 %
Efficient training and training results	55	34	8 %	3 %
Buying behaviour support	37	281	6 %	28 %
Total amount of comments	667	1001	32 %	57 %

The general tone in all the analysed 20 longest discussions was positive, and there was very little difference between Suunto´s and general discussions forums. In general, Suunto´s discussions were slightly more negative with 26 percent of the comments being negative. However, as presented in table 4, the differences are minor. An exceptionally negative tone was found in Suunto´s discussions related to software compatibility (heart rate monitors not being compatible with Mac), which in its turn explains the higher figures for Suunto. The consumers found the lack of interaction and inability to respond with speed very irritating. Thus the whole discussion took a negative turn.

Table 4 Percentages of positive, negative and neutral comments in analysed discussions.

Discussion forums	Positive comments	Negative comments	Neutral comments
Suunto	69 %	26 %	5 %
General	77 %	16 %	7 %

These findings were supported by an interview at Suunto in December 2010. The use of discussion forums had been limited, especially due to the excessive amount of information. It had also been found very difficult to access the searched information, as getting to the point usually demands reading through all the discussions. This, in turn, was found extremely time-consuming and inefficient. The company had, however, realized that consumers´ ideas can very well be used in product innovation, although it was pointed out that breakthrough ideas usually come from inside the company, whereas consumers can only give some minor thoughts. As the importance of the consumer ideas had been realized, the company was planning to launch a specific innovation platform where consumers´ ideas could be presented and discussed. A definite plus would be the possibility to tell the consumers what has already been done with their ideas and how do they look like at the moment. It had clearly not been clear how to use the discussion forums. It was mentioned that they have been occasionally read through, but not used for even surveys or even to contact interested innovators. The company established discussion forums were found relatively expensive and it had been considered that general discussion forums could be used for observation as well, and for free. It was, however, still under consideration due to the extensive amount of information in discussion forums: in which discussion forums to participate and how. There was no integration, only occasional participation and interaction, which did not bring any desired results.

It was mentioned in the interview that the company had earlier had a trainer to answer to questions in relation to training, but later on only the product managers have occasionally answered to some questions. It was easy to see in the discussions, who is the trainer and to also notice that his input was clearly appreciated by the others. In the analysed 10 Suunto discussions he had in total 28 comments, that were related to efficient training (13), accurate training results (5), software (6) or were clear opinions about the equipment (4). In the discussions there was also an official moderator, who posted three comments in relation to upcoming product launch. His participation as an official company representative was seen as annoying and delays in answering caused very negative comments.

In addition to the trainer there were very positive and experienced heart rate monitor users, who stopped the negative proceedings with a constructive comment and always said something positive about the products and Suunto. This kind of persons could easily be used as s so called “social media evangelists” efficiently in product innovation to attract others to innovate as well as to maintain a positive atmosphere, as it would not take much effort to integrate them tightly into the process. They would even most likely be happy with new improved products as a reward. As the participants clearly want to discuss the training and its efficiency, it would be an easy way to find out their level of satisfaction as well as hear new product improvement ideas. Direct company intervention in social media is seen as annoying, as was the case clearly here as well, but discussions and hints in relation to training are clearly appreciated.

Conclusions

This study shows that discussion forums can be used to find out and further develop incremental product innovation ideas. There are, however, several challenges that the companies face. Firstly, social media means interaction between individuals, not between companies and private persons. Company intervention is not appreciated, and might even been seen in a very negative light. However, any advice to training and accurate results is highly appreciated, and company intervention should be built from that perspective.

Secondly, social media discussion forums require active participation. It is not enough to establish a forum or post a comment or a question once, although such unsuccessful strategies can be noticed in social media. A successful strategy requires a detailed plan, how and in which form the company will participate. In social media discussions even a day can be a too long time to wait for an answer and a discussion can turn ugly very soon. This is the case especially in company run discussion forums, where answers are expected, even demanded. It must be remembered as well that social media gives very little room for mistakes: once written, the information will not be forgotten, and a “wrong” company answer will be posted for thousands of readers to see. A company should, thus, either reserve enough resources to participate actively in the discussions, or recruit “social media evangelists”, persons that maintain a positive atmosphere and discreetly direct the discussion towards deeper and more detailed product innovation ideas.

It is, thus, necessary to create a strategy to find the right target group and, how to use the discussion forums efficiently. Considering the speed and extensive amount of unnecessary information a structural approach is needed to, firstly, find, and, secondly, to be able to use and further develop the

important information in the discussions. The discussions definitely contain a remarkable amount of material suitable for incremental product innovation purposes, but without company participation it is there only at a very raw and preliminary stage. The "pearls" can be found and used, as well as the consumer needs defined in detail, if the consumers are integrated into the same process and dialogue with the company professionals. In addition to finding product innovation ideas that fit to the market needs, companies can easily replace traditional focus groups and surveys implemented either in paper forms or online. It should be remembered, however, that finding, discussing and developing product innovation ideas is a process, that should be approached step-by-step, because instant rewards are impossible. As in any other kind of interaction as well, the trust needs to be built at first and only then reliable and trustworthy results can be achieved.

If not properly invested in time and effort, product innovation attempts in social media discussion forums will cause more damage than benefit. A company willing to succeed, needs to first plan and strategise, and only then start to interact and subtly direct the unstructured discussions. Honesty is appreciated, and in that sense it is better to tell about the purpose of the discussion and ask for help, as one of the main features in discussion forums is the helping attitude: people want to help to solve problems. Sports addicts definitely want better and improved products, and would thus not just give any comments, but seriously try to offer serious product improvement ideas. The participants not only appreciate honesty, but it will also cause angry and disappointed comments that will seriously damage the company reputation. A company will certainly reap the rewards of creating such a consumer integration strategy, and find a clear competitive edge with passionate, committed consumer, clearly defined consumer needs and better product fit to the market.

Sources:

Amabile, T. (1996) *Creativity in context*. Westview Press Inc: Boulder, United States.

Bartl, M. (2006) *Virtuelle Kundenintegration in die Neuproduktentwicklung*. Deutscher Universitäts Verlag: Wiesbaden.

Brockhoff, K. (1985) Abstimmungsprobleme von Marketing und Technologiepolitik. *Die Betriebswirtschaft*, Vol. 45 (6), 623–632.

Cooper, R. G. (1994) New products: the factors that drive success. *International Marketing Review*, Vol. 11 (1), 60–76.

Cooper, R. G. – Kleinschmidt, E. J. (1986) An investigation into the new product process: steps, deficiencies and impact. *Journal of Product Innovation Management*, Vol. 3 (1), 71–85.

Daecke, J. (2009) *Nutzung virtualler Welten zur Kundenintegration in die Neuproduktentwicklung. Eine explorative Untersuchung am Beispiel der Automobilindustrie*. Gabler GmbH: Wiesbaden.

Dahan, E. – Hauser, J. R. (2001) Product development – managing a dispersed process. <http://scholar.google.fi/scholar?hl=fi&q=Product+development+%E2%80%93+managing+a+dispersed+process+2001&as_ylo=&as_vis=0.>, retrieved12.12.2009.

Day, G. S. – Shocker, A. D. – Srivastava, R. K. (1979) Consumer-oriented approaches to identifying product-markets. *Journal of Marketing*, Vol. 43 (1), 8–19.

Dringus, L. P. – Ellis, T. (2005) Using data mining as a strategy for assessing asynchronous discussion forums. *Computers & Education*, Vol. 45 (1), 141–160.

Ernst, H. (2004) *Virtual consumer integration – maximizing the impact of consumer integration on new product performance. Cross-functional Innovation Management*. Albers & Sohns: Wiesbaden.

Füller, J. (2010) Refining virtual co-creation from a consumer perspective. *California Management Review*, Vol. 52 (2), 98–122.

Füller, J. – Matzler, K. (2007) Virtual product experience and customer participation – A chance for customer-centred, really new products. *Technovation*, Vol. 27 (6–7), 378–387.

Gebauer, J. – Füller, J. – Pezzei, R. (2012) The dark and the right side of co-creation: Triggers of member behavior in online innovation communities. *Journal of Business Research*, Vol. 66 (9), 1516–1527.

Gassmann, O. – Wecht, C. H. (2005) Early consumer integration into the innovation process. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.121.3035&rep=rep1&type=pdf>, retrieved 20.2.2010.

Grass, T. (2009) *Kundenintegration im Innovationsprozess. Identifikation von Problemfeldern in IT-Unternehmen anhand von Fallstudienanalysen*. Technischer Universität Dortmund, Dortmund.

Hauser, J. – Tellis, G. J. – Griffin, A. (2006) Research on innovation: a review and agenda for marketing science. *Journal of Marketing*, Vol. 25 (6), 687–717.

Hayenga, O. H. (1997) *Innovationscooperation zwischen Hersteller und Anwender*. Diplomarbeiten Agentur: Hamburg.

Heiskanen, E. – Lovio, R. (2007) User knowledge in housing energy innovations. In: Proceedings of the Nordic Consumer Policy Conference 2007, <http://www.createacceptance.net/fileadmin/create-acceptance/user/docs/Heiskanen_Lovio_for_Nordic_Conference.pdf>, retrieved 12.12.2010.

Henkel, J. – Sander, J. G. (2004) Identifikation innovativer Nutzer in virtuellen Communities. In: *Management der frühen Innovationsphasen*, eds. C. Herstatt – B. Verworn, 77–111. Gabler Verlag: Wiesbaden.

Herstatt, C. (2002) Innovation durch kompetenzbasierte Diversifikation – aus der Praxis. In: *Management der frühen Innovationsphasen*, eds. C. Herstatt – B. Verworn, 103–116. Gabler Verlag: Wiesbaden.

Herstatt, C. – Verworn, B. – Nagahira, A.(2003) Reducing project related uncertainty in the ”fuzzy front end” of innovation – a comparison of German and Japanese product innovation projects. Arbeitspapier Nr. 18. <http://www.econbiz.de/archiv1/2009/96575_japan_fuzzyfontend_innovation.pdf>, retrieved 5.10.2011.

Hilzenbecher, U. (2005) Innovategy. In: *Erfolgsfaktor Innovation*, eds. R. Berndt, 45-70. Springer-Verlag: Berlin.

Hirschman, E. C. (1980) Innovativeness, novelty seeking and consumer creativity. *Journal of Consumer Creativity*, Vol. 7 (3), 283–295.

Hoffmann, E. (2007) Consumer integration in sustainable product development. *Business Strategy and the Environment*, Vol. 16 (5), 332–338.

Hoffman, E. (2006) Participatory development of climate-friendly products. <http://www.onniblogi.net/wp-content/hoffmann.pdf>, retrieved 26.2.2010.

Hoffmann, E. – Konrad, W. (2007) Konsument/innen- und Unternehmenslernen durch Nutzer/innenintegration in die Produktentwicklung. Materialien der wissenschaftlichen Begleitforschung der INNOCOPE-Verfahrens zur kooperativen Entwicklung eines Pedelec: Institut für ökologische Wirstschaftsforschung, Berlin.

Hoonsopon, D. – Tuenrom, G. (2009) The empirical study of the impact of product innovation factors on the performance of new products: radical and incremental product innovation. *The Business Review*, Cambridge, Vol. 12 (5), 155–162.

Jawecki, G. – Füller, J. – Gebauer, J. (2011) A comparison of creative behaviors in online companies across cultures. *Creativity and Innovation Management*, Vol. 20 (3), 144–156.

Jeppesen, L. B. (2005) User toolkits for innovation: consumers support each other. *The Journal of Product Innovation Management*, Vol. 22 (4), 347–362.

Kaplan, A. M. – Haenlein, M. (2009) Users of the world, unite! The challenges and opportunities of social media. *Business Horizons*, Vol. 53 (1), 59–68.

Kristensson, P. – Gustafsson, A. – Archer, T. (2004) Harnessing the creative potential among users. *The Journal of Product Innovation Management*, Vol. 21 (1), 4–14.

Lüthje, C. (2000) Characteristics of innovating users in a consumer goods field. An empirical study of sport-related product consumers". Arbeitspapier, No 8. <http://www.tu-harburg.de/tim/downloads/arbeitspapiere/Working_Paper_8.pdf> , retrieved 12.12.2010.

Lüthje, C. (2003) Methoden zur Sicherstellung von Kundenorientierung in den frühen Phasen des Innovationsprozesses. In: *Management der frühen Innovationsphasen*, eds. C. Herstatt – B. Verworn, 39–61. Gabler Verlag: Wiesbaden.

Lüthje, C. – Herstatt, C. – von Hippel, E. (2006) User-innovators and "local" information: The case of mountain biking. *Research Policy*, Vol. 34 (6), 951–965.

Mantel, J. R. – Meredith, S. J. (1986) The role of consumer cooperation in the development, marketing, and implementation of innovations. In: *Proceedings of the Fourth International Conference on Product Innovation Managemen*t, ed. H. Hubner, 27–36. Insbruck /Igls, Austria, August 26–28.

Mazzolini, M. – Maddison, S. (2007) When to jump in: the role of the instructor in online discussion forums. *Computers & Education*, Vol. 49 (2), 193–213.

McAlexander, J. H. – Schouten, J. W. – Koenig, H. F. (2002) Building brand community. *Journal of Marketing*, Vol. 86 (1), 38–54.

Mustonen, P. (2009) Social media – a new way to success? *Turku School Economics Series KR*-1:2009: Turku.

Ornetzeder, M. – Rohracher, H. (2003) User-led innovations, participation processes and the use of energy technologies. ECEEE 2003 Summer study. <http://domo.cust.pdc.nl/9307000/d/q52.pdf>, retrieved 12.12.2010.

Piller, F. (2006) User innovation: Der Kunde als Initiator und Beteiligter im Innovationsprozess. In: Open Innovation. Freier Austausch von Wissen als soziales, politisches und wissenschaftliches Erfolgsmodell, eds. O. Droussou – S. Krempl, 5-20. Heisedpunkt: Hannover.

Pitta, D. A. – Fowler, D. (2005) Online consumer communities and their value to new product developers. *Journal of Product and Brand Management*, Vol. 14 (5), 283–291.

Prahalad, C. K. – Ramaswamy, V. (2004) *The future of competition. Co-creating unique value with consumers*. Harvard Business School Press: Boston.

Reichart, S. (2002) *Kundenorientierung im Innovationsprozess*. Deutcher Universitäts Verlag: Wiesbaden.

Reichwald, R. – Meyer, A. – Engelmann, M. – Walcher, D. (2007*) Der Kunde als Innovationspartner. Konsumenten integrieren, Flop-Raten reduzieren, Angebote verbessern*. Gabler Verlag: Wiesbaden.

Rohracher, H. (2005) *User involvement in innovation processes. Strategies and limitations from a socio-technical perspective*. Profil Verlag GmbH: München.

Sandmeier, P. – Wecht, C. H (2004) Von der Kundenorientierung zur Kundenintegration. *Technische Rundschau*, Vol. 4 (1), 31–33.

Schilling, M. A. (2008) *Strategic management of technological innovation*. McGraw Hill: New York.

Scott, D. M. (2007*) The new rules of marketing and PR. How to use news releases, blogs, podcasting, viral marketing & online media to reach buyers directly*. John Wiley & Sons: Inc, New Jersey.

Seybold, P. B. (2006) *Outside innovation. How your consumers will co-design your company´s future*. HarpersCollins Publishers: New York.

Soll, J. H. (2006) *Ideengenerierung mit Konsumenten in Internet*. Deutscher Universitätsverlag: Wiesbaden.

Szmigin, I. (2003) *Understanding the consumer*. Sage Publications: London.

Tinz, T. V. (2007) *Spitzenprodukte durch Spitzensportler? Kooperative Produktentwicklung bei Sportartikeln*. Dissertation der Wirtschaftswissenschaftlichen Fakultät der Universität Zürich.

Trott, P. (2005) *Innovation management and new product development*. Third edition. Financial Times Prentice Hall: Harlow.

Ulwick, A. W. (2005) *What consumers want. Using outcome-driven innovation to create breakthrough products and services*. McGrawHill: London.

Urban, G. L. – Hauser, J. R. (1993) *Design and marketing of new products*. Prentice Hall: New Jersey.

Urban, G. – von Hippel E. (1988) Lead user analyses for the development of new industrial products. *Management Science*, Vol. 34 (5), 569–582.

Wecht, C. H. (2006) *Frühe active Kundenintegration in den Innovationsprozess*. Dissertation. Alwa & Deil Druckerei GmbH: Wien.

Verona, G. – Prandelli, E. – Sawhney, M. (2006) Innovation and virtual environments: towards virtual knowledge brokers. *Organisation Studies*, Vol. 27(6), 765-788.

Verworn, B. – Herstatt, C. (1999) Approaches to the "Fuzzy Front End" of innovation", Arbeitspapier Nr. 2: <http://www.tu-harburg.de/tim/downloads/arbeitspapiere/Arbeitspapier_2.pdf>, retrieved 12.12.2010.

Wobser, G. (2003) *Produktentwicklung in Kooperation mit Anwendern. Einsatzmöglichkeiten des Internets*. Deutcher Universitäts Verlag: Wiesbaden.

Volmer, C. – Precourt, G. (2008) *Always on. Advertising, marketing, and media in an era of consumer control*. McGrawHill: New York.

von Hippel, E. (2007) Horizontal innovation networks – by and for users. *Industrial and Corporate Change*, Vol. 16 (2), 293–315.

von Hippel, E. – Katz, R. (2002) Shifting innovation to users via toolkits. *Management Science*, Vol. 48 (5), 821–833.

von Hippel, E. (2001) Innovation by user communities: learning from open-source software. *Mit Sloan Management Review*, Summer 2001, 82–87.

Zirger, B. J. – Maidique, M. A. (1990) A model of new product development: an empirical test. *Management Science*, Vol. 36 (7), 867–883.

Appendices A

Table 5 List of discussion forums analysed

Forums	Amount of discussions	Analysed period
Fillarifoorumi	49	11/2003–10/2010
Kiloklubi	36	5/2006–10/2010
Lenkkivihko	3	5/2007–10/2010
Nojatuolifoorumi	1	3/2006–10/2010
Potku.net	1	2/2007–10/2010
Suomi 24.fi	28	11/2003–10/2010
Suunto TC1	28	1/2006–10/2010
Suunto TC3	298	1/2006–10/2010
Suunto TC4	268	1/2006–10/2010
Suunto TC6	479	1/2006–10/2010
Suunto Software	215	1/2006–10/2010
Suunto Smartbelt	60	1/2006–10/2010
Suunto Sports	30	1/2006–10/2010
Suunto Team pod	9	1/2006–10/2010
suunto bike pod	26	1/2006–10/2010
Suunto cadence pod	8	1/2006–10/2010
Suunto comfort belt	24	1/2006–10/2010
Suunto diving- freediving	10	1/2006–10/2010
Suunto diving- scubadiving	29	1/2006–10/2010
Suunto diving products	162	1/2006–10/2010
Suunto diving software	91	1/2006–10/2010
Suunto foot pod	73	1/2006–10/2010
Suunto GPS pod	78	1/2006–10/2010
Suunto outdoor products	89	1/2006–10/2010
Suunto outdoor software	11	1/2006–10/2010
Suunto outdoor sports	1	1/2006–10/2010
Suunto PC pod	53	1/2006–10/2010
Suunto road bike pod	27	1/2006–10/2010

Article manuscript 2

Haavisto, Piia – Sandberg, Birgitta. “Man, this frustrates me”: Change of consumer emotions in online discussions

Sent to Journal of Research in Interactive Marketing
Earlier version has been published in ISPIM conference 2013 Proceedings

“MAN, THIS FRUSTRATES ME”: CHANGE OF CONSUMER EMOTIONS IN ONLINE DISCUSSIONS

Abstract

Purpose - The purpose of this paper is to analyse how consumer emotions towards innovation change over online discussions.
Design / methodology / approach - This is an empirical study based on substantial data collected from 22 discussion forums, of which the ten longest discussions on heart-rate monitors were chosen for further qualitative analysis.
Findings - The results show that a variety of consumer emotions can be detected in online discussions. Negative emotions clearly seem to dominate and be generally stronger than those that are positive. The results also show how product, company and behaviour enabled by the product (in this case, training) evoke different emotions in customers.
Research limitations / implications: Our study focuses only on emotional expressions presented by consumers online. However, the analysis of consumers’ basic emotions, their grounds and change can be transferred to other settings in which interaction among customers is studied; for example, in focus group interviews.
Practical implications - Results show how negative emotions felt towards a product tend rapidly to extend to anger and frustration targeted at the respective firm. This highlights the importance of company intervention.
Originality / value - By analysing the change of emotions longitudinally, we are able to show the increase of anger over online discussions. We show how the target of emotion changes and how emotions spread from customer to customer.

Introduction

The innovation management literature has paid truly significant attention to the role of consumer feedback in innovation processes (e.g. Holt et al., 1984; Veryzer, 1998; von Hippel, 1986), and it has been claimed that understanding

consumers' emotions is important to comprehending their behaviour and latent needs (cf. Éthier et al., 2006). Paying attention to consumer feedback and creating emotive connections with them enables firms to attain consumer loyalty and create less replicable differentiation strategies, and cope with increasing pressures to innovate in global markets (Chea and Luo, 2008).

Word-of-mouth communication has long been recognised to be particularly important in consumer behaviour (e.g., Katz and Lazarsfeld, 1955). A growing amount of consumer interaction occurs online; for example, in discussion forums, blogs and Facebook. Thus, it is important for innovating firms to understand how better to utilise information provided by social media in innovation development. Recent research has acknowledged the value of online communities to innovation management. The extant research on open innovation (e.g. Chesbrough, 2003; Seybold, 2006) and crowdsourcing (e.g. Howe, 2008; Poetz and Schreier, 2012) recognises the direct participation of consumers in innovation creation. It is also acknowledged that, although consumers do not intentionally participate in innovation development, they share a large amount of information online which would be useful for innovators striving to understand consumer behaviour and their needs (e.g. Füller et al., 2006; Pitta and Fowler, 2005).

Thus, the information available in social media offers companies many unexploited opportunities. In addition to information on consumers' opinions and behaviour, online communities can also reveal a lot about their emotions towards companies and their products (e.g. Kwortnik and Ross, 2007). Emotions experienced in social media can be regarded as indicators of real emotions towards the product or firm; even though experiencing an emotion does not always lead to its expression, expressing an emotion tends to be accompanied by experiencing it (Brebner, 2003). From the firm's perspective, consumers' emotional expressions online can have long-lasting effects; even though by definition emotions are temporal (Larsen et al., 2009; Solomon, 2008), emotional outbursts expressed online remain for everyone to see for a long time after the emotion itself has vanished.

While the role of emotions in innovation adoption is widely recognised and although consumer emotions are increasingly expressed online, both marketing and innovation management research streams lack knowledge on how emotions are expressed and shared in social media (Chea and Luo, 2008). Nevertheless, emotions can play a particularly important role in the online context, whereby it is relatively easy to complain about or recommend products (ibid.) and anonymously express strong emotions (Coffey and Woolworth, 2004).

Emotional states in online discussions among consumers seems to influence on their attitudes towards the companies (Nambisan and Baron, 2007). Past

studies show that particularly negative emotions are openly expressed in online discussions on sensitive topics, in particular in short-term discussion forums where participants do not get to know each other (ibid.). These emotions can lead to harsh comments and conversational impoliteness (ibid.; Papacharissi, 2004). Nevertheless, we know neither the strength of the emotion nor which particular emotions discussants express online when their emotional attachment to a discussion topic (in this case, innovative product) is unlikely to be particularly strong. In addition, we not we have knowledge on the extent to which negative and positive emotions are targeted at other discussants as opposed to the discussion topic itself (cf. Chmiel et al., 2011).

Individuals' emotions are constantly changing; that is, varying in the level of their intensity and between different emotions (Carrera and Oceja, 2007; Filipowicz et al., 2011). Hence, it is argued that a comprehensive understanding of emotions requires the inclusion of the temporal dimension in research (Larsen et al., 2009). However, studies addressing changes in emotions are scarce and, although the online environment forms fertile ground for emotional contagion among current and prospective consumers (Filipowicz et al., 2011), our knowledge on changing emotions in the online context is almost non-existent.

Consequently, the study's research problem is: How do consumer emotions towards an innovation change over online discussions? This question is approached via the following sub-questions: (1) What kinds of emotion are expressed online? (2) What evokes negative and positive emotions in online discussions? and (3) How do emotions change over the discussion?

We believe that answering these questions will increase our knowledge on the role of emotions in innovation adoption and thereby also increase our understanding on the potential of discussion forums for innovation development. The extant research on consumers' expressions of emotion is presented briefly in the next section, which is followed by the justification of methodological choices and discussion on research findings. The paper concludes with theoretical and managerial implications.

Consumers' online expressions of emotion

Emotions can be defined as short-term feelings that arise because of something, vary in intensity and get expressed (sometimes minimally) in behaviour (Frijda, 1993; Larsen et al., 2009; Rank and Frese, 2008; Solomon, 2008). Emotions derive from individuals' evaluations of triggering events and thus have a cognitive origin (Soscia, 2013). There are various categorisations of basic emotions (see Laros and Steenkamp, 2005); however, in business

sciences they are often divided into four positive (i.e. contentment, happiness, affection/love and pride) and four negative (i.e. anger, fear, sadness and shame) basic emotions (e.g. Brebner, 2003; Eid and Diener, 2001; Laros and Steenkamp, 2005). These emotions and their common reasons are shown in table 1.

Table 1 Basic consumer emotions

Basic emotions	Specific emotions (based on Laros & Steenkamp, 2005)	Typical reasons for emotions
Affection	Sexy, romantic, passionate, loving, sentimental, warm-heated.	Personal ties, sexual desire or admiration (cf. Shaver et al., 1996)
Anger	Angry, frustrated, irritated, unfulfilled, discontented, envious, jealous.	Adverse state that could be resolved (e.g. broken promises, unfair treatment or expressed hostility) (Funches, 2011; Soscia, 2013)
Contentment	Contented, fulfilled, peaceful.	Situations appraised as safe, certain and serene (Ellsworth & Smith, 1988; Fredrickson, 1998)
Fear	Scared, afraid, panicky, nervous, worried, tense.	Identifiable threatening stimuli (Öhman, 2010)
Happiness	Optimistic, encouraged, hopeful, happy, pleased, joyful, relieved, thrilled, enthusiastic.	Positive event, success, positive individual activities and relationships, and engaging in fulfilling activities (Soscia, 2013)
Pride	Proud.	Personal achievement (Fredrickson, 2001)
Sadness	Depressed, sad, miserable, helpless, nostalgia, guilty.	Irrevocable loss of something important (Bonanno et al., 2010)
Shame	Embarrassed, ashamed, humiliated.	Failure of oneself (Lewis, 2010)

Individuals often experience different, even opposite, emotions simultaneously (Carrera and Oceja, 2007). Furthermore, past studies show that emotions change both in the level of their intensity (ibid.) and between different emotions (Filipowicz et al., 2011). Thus, to capture a comprehensive understanding on emotions, Larsen et al. (2009) urged inclusion of the temporal dimension in research on emotion. The extant research (Filipowicz et al., 2011) indicates that changes of emotion easily occur in social interactions and, therefore, that the temporal dimension seems to be of particular

importance when studying online discussions in which individuals interact intensively over a particular timeframe.

Emotions are contagious. Positive emotions expressed by one tend to spread (i.e. fuel more positive emotions in others) whereas expressed negative emotions can lead to a bigger variety of emotional expressions in others (Chmiel et al., 2011; Hatfield et al., 1993; Rozin and Royzman, 2001). Furthermore, individuals in an interaction have a tendency to mimic the behaviour of others and to feel the emotions they express (Duclos et al., 1989). Hence, they tend automatically to become emotionally in tune with others (Bartel and Saavedra, 2000). While interacting, individuals constantly compare their own reactions with those of relevant others, and social pressures towards unity tend to make their emotions convergent (Festinger, 1954; Sullins, 1991).

Different negative emotions experienced by consumers are connected to different goals when engaging in negative word-of-mouth (N-WOM). For example, angry consumers are likely to spread N-WOM to take revenge on a firm, whereas disappointed consumers engage in N-WOM to seek comfort (Wetzer, Zeelenberg and Pieters, 2007). Past studies (Chebat et al., 2005; Strizhakova, Tsarenko, and Ruth, 2012) indicate that consumers are more prone to express negative emotions in the online environment, where face-to-face contact with the respective company is missing. Consumers seem to be more inclined to transmit N-WOM than positive word-of-mouth (De Angelis et al., 2012), which is likely to facilitate its spread in the online environment. Negative comments expressed online (i.e. negative O-WOM) have received limited attention (Grégoire et al., 2009) and have largely concentrated on the effects of negative O-WOM (Verhagen, Nauta and Feldberg, 2013). The extant studies indicate that negative O-WOM has detrimental effects on consumer-based brand equity (Bambauer-Sachse and Mangold, 2011), especially in weak brands (Ho-Dac, Carson and Moore, 2013), and decreases online purchase intentions (Fagerstrøm and Ghinea, 2011).

However, the extant research perceived negativity as a comprehensive concept without taking into account the distinct emotions by which negativity is conceived (Yin, Bond and Zhang, 2014). A study by Yin et al. (2014) shows that distinct emotions expressed online evoke distinct perceptions among readers and a study by Berger and Milkman (2013) indicates that consumer experiences evoking anxiety or anger are more likely to be shared online than those evoking sadness. In addition, longitudinal research on emotions expressed online along discussion threads is scarce. Colliander and Wien (2013) studied long discussion threads and analysed how and why consumers engage in O-WOM to defend companies and brands criticised by others. Their findings indicate the prevalence of different negative emotions (e.g. angriness, guilt, frustration and dissatisfaction) in the discussions, even though they did

not explicitly concentrate on emotions. The findings by Chmiel et al. (2011) indicate that, during online discussions, emotions expressed by participants depend on emotions expressed in previous posts; positive emotions generally fuelling more positive emotions, whereas negative emotions lead to a bigger variety of emotional expressions. It was also shown that stronger emotional expressions tend to lead to longer discussion threads, whereas discussions starting at a lower emotional level tend to be shorter (Chmiel et al., 2011).

Consumers' post-adoptive behaviour has been the subject of research in both marketing and innovation management. The marketing literature has paid truly significant attention to complaint and recommendation behaviours (e.g. Bougie et al., 2003; East et al., 2005; Singh, 1988), the role of emotions in marketing (Bagozzi et al., 1999) and face-to-face business encounters (e.g. Liljander and Strandvik, 1997; Phillips and Baumgartner, 2002). It is known that emotions influence consumer's information processing and decision making (Bagozzi et al., 1999; Phillips and Baumgartner, 2002; Rucker and Petty, 2004); when consumer dissatisfaction turns to anger, their propensity to switch from one provider to another increases significantly (Bougie et al., 2003). The innovation management literature has an increasing interest in understanding emotions expressed among innovation adopters (e.g. Füller and Matzler, 2007; Wood and Moreau, 2006). It is acknowledged that emotions influence evaluation of complex products. Consumers have expectations towards novel products and, when they first employ the products, the experience on how well their expectations are met is likely to evoke positive and/or negative emotions (Wood and Moreau, 2006).

Consumers who complain online tend to hold a grudge for a long time (Grégoire et al., 2009). It has been suggested that negative emotions openly expressed online lead to a variety of behaviours, such as coping with a situation, avoidance, venting and protesting, attempts to influence other consumers, and boycott and revenge (Tuzovic, 2010). When consumers openly express their negative emotions, companies can more easily react and tailor their recovery efforts to fit the consumers' emotional moods (Chebat et al., 2005; Smith and Bolton, 2002). As negative WOM can rapidly damage a company (Tuzovic, 2010), Chea and Luo (2008) suggest that complaints should be handled quickly and that constructive complaints might even be encouraged and rewarded. Even though a firm's post-complaint recovery attempts cannot easily reverse complainers' attitudes (Grégoire et al., 2009), they can at least discourage the spread of negative emotions in the discussion forum. Thus, a company's ability to cope with and manage affective conflicts in consumer relations plays an important role in strengthening consumer-seller relationships (Bradford and Barton, 2009).

In sum, past studies indicate that, to understand consumers' behaviour towards innovations, we should also address their emotions. Understanding on consumers' emotions remains scant; even more so when considering emotions expressed online. However, by combining the findings from previous research on emotions and negative O-WOM, we can assume that, in online discussions, negative emotions dominate, spread easily and influence consumers' behaviour. The methodology employed in our study concentrating on these issues is described in the next section.

Methodology

To tackle the complex, multifaceted and longitudinal phenomenon at hand, a qualitative approach was chosen. The academic literature (e.g. Jawecki et al., 2009; Jeppesen, 2005; Lüthje, 2003; Tinz, 2007) shows the importance of sports enthusiasts and hobbyists in product innovation. Thus, being regarded as the most eager and interested innovators, we assumed that they would engage in long online-discussions and express also a variety of emotions. Therefore, we chose a sports equipment-related discussion forum as the focus for data collection. First, the most popular discussion forums in Finland were read; it was apparent that heart-rate monitors were the most discussed topic. This led the researchers to online forums that related only to heart-rate monitors. In total, 2,187 discussions on a heart-rate monitor manufacturer's Internet discussion forum and also general sports-related discussion forums on the Internet were read and collected for further analysis.

Most of the discussions, especially in general discussion forums, were very short, comprising less than five comments and including few emotions. Discussions read on the company maintained forums contained more detailed and longer comments. As the previous studies (e.g. Chmiel et al., 2011) indicated that emotions are more accentuated in longer discussion threads, we chose the ten longest discussions found in the company maintained forums for further analysis. We were prepared to include more discussions in the analysis. However, as it became clear along the analysis that the course of the discussions, in terms of emotions expressed, their triggers and outcomes, was rather similar, it was considered that adding more discussions to the analysis would not change the study's results (cf. Bowen, 2008). The discussions included in the study contained 636 comments in total, all of which were included in the analysis.

In this study, the systematic nature of data analysis was particularly accentuated, especially as emotions in general are hard to identify and classify (cf. Dasborough et al., 2008). The employment of QSR N'Vivo enhanced the

analytical process because coding revisions could be conducted several times as the level of conceptualisation increased. Two researchers participated in the coding. First that data was coded through by one researcher and then all the codes were evaluated and synthesised together through careful comparison between the researchers Emotions shown in the discussions were first coded deductively in line with the widely employed typology (e.g. Brebner, 2003; Eid and Diener, 2001; Laros and Steenkamp, 2005) of four positive (i.e. affection, contentment, happiness and pride) and four negative (i.e. anger, fear, sadness and shame) emotions. Later in the analysis, frustration was also coded as a separate negative emotion as it was noticeably expressed in the data and has been acknowledged as a highly negative emotion frequently expressed in consumer behaviour (e.g. Guchait and Namasivayam, 2012; Tuzovic, 2010). Triggers of emotions were coded inductively, thus enabling the diversity of issues emerging from the data to be addressed. This included looking for features that distinguish one category from another, forming and labelling categories, putting data into the new categories and checking their feasibility, and then often splitting categories further into new, narrower and re-labelled categories, or integrating two overlapping categories. Table 2 illustrates examples of citations and the emotions interpreted by the researchers. Table 3 shows citations communicating reasons for the emotions and the corresponding researchers' interpretations.

The chronological order of comments was also addressed, thereby enabling analysis on how the discussions proceeded: the emotion that each comment represented (unless not neutral) and to what level of intensity (i.e. a little, medium or great amount of the emotion in question).

Findings

Variety of emotions expressed online

In total there were 636 comments in the ten chosen discussions relating to heart-rate monitors. Typically, the discussions were neutral; participants were asking for help and answering each other´s questions. As shown in table 2, anger was the most prevalent emotion: in total, among these 636 comments there were 93 angry comments, followed by frustration, contentment, happiness and affection. However, there were no comments indicating shame or pride. Furthermore, fear and sadness were only apparent in a couple of comments.

Table 2 Emotions shown in the discussions

Emotion	Number of comments	Example of citation expressing the emotion
Affection	16	I like my watch. I´m new to these watches that I love. I´m a XYZ* fan.
Anger	93	It´s so bad that XYZ* is ignoring their customers like this! Listen to your customers XYZ*! I´m now a very unhappy and dissatisfied XYZ* watch owner.
Contentment	25	I´m satisfied with the pod. The repeatability is sufficient for me. The new pod is very easy to secure.
Fear	3	I´m afraid that I´ll lose all the data! Imagine my horror when I found out that they don´t support Mac.
Frustration	26	I´m so confused, very very confused. Man this frustrates me. It´s so frustrating. I wish they could just come clean and help users make more informed decisions.
Happiness	23	I´m happy with the new pod. These are great improvements. I´m very happy that XYZ* finally released a Mac friendly software.
Pride	0	
Sadness	2	I´m sad as the speed reading is not good. It´s sad, very sad…
Shame	0	

* Name of the company

Reasons for negative and positive emotions

Table 3 shows the prevalence of emotions in discussions. Affection was expressed mildly in terms such as “I like the product”, “I´m an enthusiast” or “I´m a supporter of this company”, whereas the strongest expressions of emotions related to happiness; for instance, with comments such as “splendid”, “damn wonderful” and “fantastic”.

Table 3 Expressions of emotions in discussions

Emotion	Reasons for emotions	More detailed characterisation of reasons (numbers indicate the number of comments relating to a particular reason)
Affection (love)	Product	I like (3) / love (5) my XYZ* product. I love the combination of Mac and a heart-rate monitor (2).
	Company	I´m a XYZ* fan (3) / a firm supporter of XYZ* (3).
Anger	Product	I would not buy it any more (2). The product is poor (6) / useless (1) / unreliable (3). The material is weak (1) / crappy (1). The connection fails (3). The basic features are lacking (4) / extremely annoying (4). Unnecessary features (2). It´s too expensive. (1) Quality is poor (3), poor update (1) I´ll leave XYZ* as it´s not compatible with Mac (15). Training Manager is ugly and clumsy (1) Software is poor.(1)
	Company	Maintenance takes too long (1). Quality problems (8). XYZ* is not answering (8). XYZ* helpdesk does not know the answer (7). Technical ability of the company is lacking (3). XYZ* is arrogant and does not value its customers (19). XYZ* is not concentrating on product innovation (9). XYZ* has to come up with something really rapidly to satisfy us. No information on new updates (7).
	Training	Inaccurate results (4).
Contentment	Product	It´s a good / great product (8) and precise (5). It´s easy to use. The software has a purpose.
	Company	XYZ* answered very quickly.
	Training	It´s accurate (4). It´s good and useful to train with (6). It´s very good for multi-sport athletes.
Fear	Product	I´m afraid of losing data. It´s difficult to use without good instructions. The software is not compatible with Mac.
Frustration	Product	Annoying features (2). Difficulties in using it (2). Communication failures. Software is not compatible with Mac (3). Cannot install the software. Do not trust the Training Manager (2).
	Company	XYZ* personnel are inexperienced technically. XYZ* does not inform customers (3).
Happiness	Product	I´m very happy with the product (11). These are great improvements.

		It´s a very good for training (9). A very good software (2).
	Company	Maintenance is quick.
Sadness	Product	Inaccurate speed reading. I´m very sad about this product quality.

* Name of the company

Affection was typically expressed mildly and related to either the products or the company. Comments such as “I like my XYZ product”, “I love XYZ watches”, “I´m a firm supporter of XYZ” or “I´m a XYZ fan” were typical.

Anger was expressed with stronger expressions, exclamation marks and sometimes even referring to the company as “stupid” or “idiots”. In turn, this led to repetitious comments and general annoyance. Most comments related to the product and its features.

Contentment mostly related to the equipment. In some cases it was stated as a conclusion that the company “is very good”. However, in the main, comments only related to the products; both to accuracy and possibilities (e.g. what kind of results and figures were possible), and ease of use. Some comments were also directed at other participants: “If you look back at the older posts there are quite a few people claiming the product is no good and it turned out that they had their belts too loose. Once this was corrected, they were happy users again.”

Fear was mentioned on only a couple of occasions and then rather neutrally. It was mentioned in direct connection to the product’s performance. The comments related to the inability to use the product, the possibility of losing training data or software incompatibility.

Frustration related to the rate of error (i.e. the most common reason for frustration), an inability to employ Mac with XYZ equipment, software problems and irrelevant solutions. However, these comments did not take an overly negative form and the discussions were polite, with problems being addressed to other participants and not the company. The main point was to find a solution and, typically, various experiments and charts were given to solve a problem. It is clear that participants were mainly interested in training and the accuracy of results. While inaccurate results caused frustration, they liked their heart-rate monitors, employing which they tried to get the best training.

Happiness mainly related to training results and the use of the equipment. Some comments were also written to praise the company for rapidly sending a replacement. The words expressing the strongest emotion of happiness were: “splendid”, “damn wonderful”, “fantastic”, “God this is sooooooooo cool” and “I´m excited”.

Sadness was not a typical emotion as it was mentioned only twice, and even then rather mildly. It related to product quality and inaccurate training results.

Figures 1, 2 and 3 depict how product, company and training evoke different emotions. Comments relating to the product seemed to display the greatest variety of emotions, with negative emotions being slightly dominant. Anger was the most commonly expressed emotion, followed by happiness and contentment. Anger was clearly dominant in comments relating to the company. Altogether, negative emotions were seen in nearly 90 percent of emotional comments on the company. Comments related to training results and their accuracy of measurement were typically directed to other participants, and their tone was mostly positive. There were almost no emotions expressed, but those that were, were mainly positive. The error rates in heart-rate measurement caused frustration, but this was not directed to the company or even the product: in fact, participants pondered whether they might be doing something wrong. They were extremely interested in solving a problem and getting the best training possible. The goal was to get the most out of the equipment and offer different solutions, even to create a solution together.

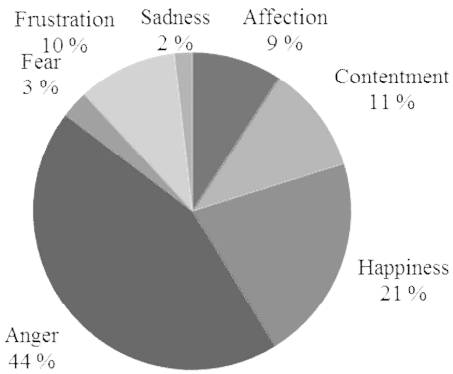

Figure 1 Emotions evoked by the product (n=112)

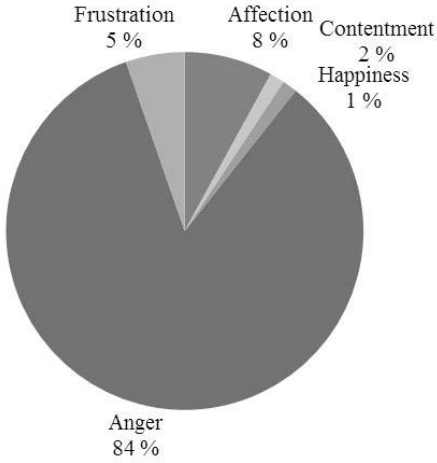

Figure 2 Emotions evoked by the company (n=75)

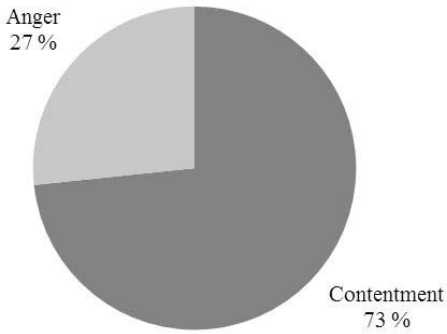

Figure 3 Emotions evoked by training (n=15)

Change in emotions during online discussions

It was notable that anger and frustration first related to the product and its features but, as the discussion proceeded, it took a very negative turn against the company. Anger was further fuelled by the firm's unresponsiveness. It seemed to be particularly irritating that the company did not react to the online complaints, as consumers were clearly expecting answers. Comments engendered by the company's passivity were much more negative than those caused

by the original dissatisfaction. This was exemplified with comments such as: “Listen to your customers, XYZ”, “XYZ does not listen”, “keep on sleeping XYZ” and “all XYZ seems to be worrying about is releasing more and more overpriced watches and not keeping the customers satisfied by giving some additional services – they are idiots when it comes to customer service”. Although some persons wrote several comments, there were new participants joining the discussion during the whole process. Angry comments seemed to provoke other similar comments directed to the company.

In addition, the whole discussion became very negative and angry at this point with only one or two participants trying to calm the others by suggesting that a solution would be found or that this kind of solution was not provided by other companies either. As presented in figure 4, once these discussions had taken a very negative turn, there seemed to be no way to stop them; no comments helped.

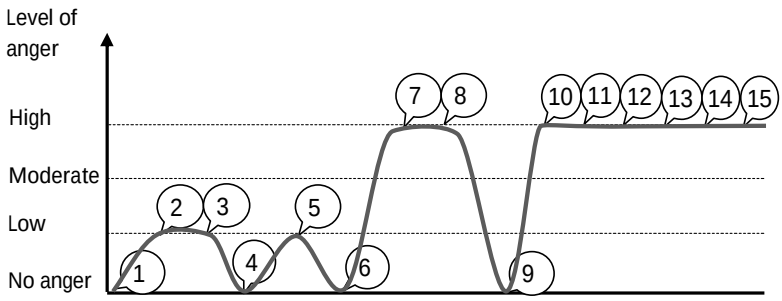

Figure 4 Example of evolution of anger in comments (numbers indicating the order of individual comments in a discussion thread)

In the discussions, negative emotions were both dominant and seemed to create self-enforcing cycles. In contrast, positive emotions did not lead to overall positive discussions in the same way than negative emotions led to negative discussions. While there might be several consecutive positive comments, totally positive discussions did not exist.

Discussion

Adding to the extant knowledge on emotions shared in discussion forums focusing on sensitive issues (e.g. Coffey and Woolworth, 2004), our study shows also that discussants in online forums focusing on products openly express both negative and positive emotions. In these discussions, negative

emotions seem to be clearly dominant and, in general, are stronger than those that are positive. The proportion of angry comments in particular was considerable; especially, angriness and frustration predominated in comments relating to the company. The prevalence of a negative tone in online discussions can be extremely harmful to a firm, as indicated by past research (e.g. Baumeister et al., 2001) showing that bad impressions tend to be formed more quickly and are more resistant to rebuttal than those which are good.

Furthermore, the results reveal how product, company and behaviour enabled by the product (in this case, training) evoke different emotions in customers. Most emotions related to the product. Behaviour evoked the largest proportion of positive emotions, whereas emotions targeted at the company were highly negative. Public online complaints and their damaging consequences for firms have been acknowledged (e.g. Grégoire et al., 2009; Ward and Ostrom, 2006). Concluding these results, our study reveals the increase of anger; that is, how negative emotions felt towards a product tend to rapidly become anger and frustration targeted at the respective firm.

Conclusions

Theoretical contribution

The measurement of emotions in the consumption experience has been regarded as an important but highly complicated issue in efforts to understand consumer behaviour (Richins, 1997). Increasing customer communication in the online context offers a platform on which researchers will be able to observe and analyse expressed consumer emotions. Our study shows that a variety of consumer emotions can be detected in online discussions. It also shows that the categorisation of basic consumer emotions proposed by Laros and Steenkamp (2005) works seemingly well with online data. However, to capture the variety of negative emotions, our results suggest that, in the future, other researchers studying emotional online reactions might also consider including “frustration” in the typology of basic emotions. This suggestion is in line with Wetzer et al. (2007) and Guchait and Namasivayam (2012) who previously argued that frustration should be distinguished from anger when analysing consumer behaviour.

Our findings support previous studies indicating that negative emotions dominate in online consumer discussions (e.g. De Angelis et al., 2012; Lee and Cude, 2012) and spread easily (Rozin and Royzman, 2001). In addition, our research shows clearly that although emotions are usually first targeted at an innovation and its features, in a relatively short time they tend to be directed at the whole firm. This finding adds another dimension to our current

understanding on dynamics of emotions. Previous studies (e.g. Filipowicz et al., 2011) have contemplated the change from one emotion to another and the contagion of emotions from one individual to another. However, in addition to these, we also show how the target of emotion changes by describing how anger expressed towards the product turns into anger towards the whole company. This adds another dimension to the previous studies on negative O-WOM (e.g. Sandes and Urdan, 2013) that have accentuated the detrimental impact of negative O-WOM to brand image by showing that the impact of negative O-WOM can extend far beyond one brand. Furthermore, adding to the understanding on emotional contagion and to previous studies that show how emotions impact customers and sellers (e.g., Dallimore et al., 2007), we indicate how emotions spread from customer to customer.

With regard to the innovation management literature, this finding highlights the importance of not only handling consumer complaints, but also more carefully planning innovation portfolios. Our research confirms findings by, for example, Chea and Luo (2008) and Chebat et al. (2005) that it is extremely important for firms to show interest in online consumer complaints and rapidly address problems that evoke negative emotions online. The extant research on innovation portfolios emphasises platform synergy (Mathews 2011) and balancing between incremental and radical innovations (Nagji and Tuff, 2012). However, our study indicates that, when considering innovation portfolios, emotions evoked by the firm and its current products should be also addressed.

Practical implications

To receive relevant consumer feedback and product improvement ideas, understanding the dynamics of consumer online behaviour, especially complaint behaviour, is essential for a company (Chea and Luo, 2008). Earlier studies (e.g., Bickart and Schindler, 2001) have suggested that companies should actively support the development of consumer online communities to exchange information and develop relationships with consumers. Our study suggests that those discussion forums need to be carefully monitored, since in the discussions one angry or frustrated comment leads to another, and typically the whole discussion becomes very negative, effectively preventing constructive discussion on an innovation. As such, company intervention is essential. Consumers typically require information and company unresponsiveness fuels negative feelings. This is a challenge to companies; in online discussions, answers need to be given quickly and, preferably, on the same day.

In addition, a simple response might not suffice. Customers who have experienced failure and express a negative emotional response tend to expect concrete compensation, not just an apology or explanation (Smith and Bolton, 2002). However, in the online context, it can be extremely difficult to identify complainants to whom to offer compensation.

Limitations and suggestions for further research

There are several limitations in our study. First, although the study is based on extensive data, we focused only on discussions concerning one product category: heart-rate monitors. Second, we relied only on emotional expressions put forward by consumers online when analysing changing consumer emotions. Third, acknowledging difficulties in the measurement of emotions, we mainly relied on the operationalisation of basic consumer emotions. The results might have provided more detailed insight if we had also analysed subcategories of the basic emotions. Fourth, the analysed discussions were from forums maintained by the company, in which participants can express emotions in different ways to participants in general discussion forums.

Our understanding on consumers' emotions has just begun to increase and, thus, there is plenty of space for future studies. More research is needed to develop measures for emotions in the business context. Our understanding on contagion of emotions in social encounters is scant and the effect of emotions of purchasing behaviour remains largely unexplored.

References

Bagozzi, R. P. – Gopinath, M. – Nyer, P. U. (1999) The role of emotions in marketing. *Journal of the Academy of Marketing Science*, Vol. 27 (2), 184–206.

Bambauer-Sachse, S. – Mangold, S. (2011) Brand equity dilution through negative online word-of-mouth communication. *Journal of Retailing and Consumer Services*, Vol. 18 (1), 38–45.

Bartel, C. A. – Saavedra, R. (2000) The collective construction of work group moods. *Administrative Science Quarterly*, Vol. 45 (2), 197–231.

Baumeister, R. F. – Bratlavsky, E. – Finkenauer, C. – Vohs K. D. (2001) Bad is stronger than good. *Review of General Psychology*, Vol. 5 (4), 323–370.

Berger, J. – Milkman, K. L. (2013) Emotion and virality: What makes online content go viral? *Insights*, Vol. 5 (1), 18–23.

Bonanno, G. A. – Goorin, L. – Coifman, K. C. (2010) Sadness and grief. In: *Handbook of Emotions*, eds. M. Lewis – J. M. Haviland-Jones – L. F. Barrett, 797–810. The Guildford Press: New York.

Bougie, R. – Pieters, R. – Zeelenberg, M. (2003) Angry customers don't come back, they get back: The experience and behavioral implications of anger dissatisfaction in services. *Journal of the Academy of Marketing Science*, Vol. 31 (4), 377–393.

Bowen, G. A. (2008) Naturalistic inquiry and the saturation concept: a research note. *Qualitative Research*, Vol. 8 (1), 137–152.

Bradford, K. D. – Barton A. W. (2009) Salespersons' management of conflict in buyer-seller relationships. *Journal of Personal Selling & Sales Management*, Vol. 29 (1), 25–42.

Brebner, J. (2003) Gender and emotions. *Personality and Individual Differences*, Vol. 34 (3), 387–394.

Carrera, P. – Oceja, L. (2007) Drawing mixed emotions: Sequential or simultaneous experiences? *Cognition and Emotion*, Vol. 21 (2), 422–441.

Chea, S. – Luo, M. M. (2008) Post-adoption behaviors of e-service customers: The interplay of cognition and emotion. *International Journal of Electronic Commerce*, Vol. 12 (3), 29–56.

Chebat, J-C. – Davidow, M. – Codjovi, I. (2003) Silent voices: Why some dissatisfied consumers fail to complain. *Journal of Service Research*, Vol. 7 (4), 328–342.

Chesbrough, H. (2003) *Open innovation*. Harvard Business School Publishing Corporation: Massachusetts.

Chmiel, A. – Sienkiewicz, J. – Thelwall, M. – Paltoglou, G. – Buckley, K. – Kappas, A. – Holyst, J. A. (2011) Collective emotions online and their influence on community life. *PLos ONE*, Vol. 6 (7), 1–8.

Coffey, B. – Woolworth, S. (2004) Destroy the scum, and then neuter their families: the web forum as a vehicle for community discourse? *The Social Science Journal*, Vol. 41 (1), 1–14.

Colliander, J. – Wien, A. H. (2013) Trash talk rebuffed: consumers' defence of companies criticized in online communities. *European Journal of Marketing*, Vol. 47 (10), 1733–1757.

Dallimore, K. S. – Sparks, B. A. – Butcher, K. (2007) The influence of angry customer outbursts on service providers' facial displays and affective states. *Journal of Service Research*, Vol. 10 (1), 78–92.

Dasborough M. T. – Sinclair M. – Russell-Bennett, R. – Tombs, A. (2008) Measuring emotion: methodological issues and alternatives. In: *Research Companion to Emotion in Organizations*, eds. N. M. Ashkanasy – C. L. Cooper, 197–208. Edward Elgar: Cheltenham.

De Angelis, M. – Bonezzi, A. – Peluso, A. M. – Rucker, D. D. – Costabile, M. (2012) On braggarts and gossips: A self-enhancement account of word-of mouth generation and transmission. *Journal of Marketing Research*, Vol. 49 (4), 551–563.

Duclos, S. E. – Laird, J. D. – Schneider, E. – Sexter, M. – Stern, L. – Van Lighten, O. (1989) Emotion-specific effects of facial expressions and postures on emotional experience. *Journal of Personality and Social Psychology*, Vol. 57 (1), 100–108.

East, R. – Hammond, K. – Lomax, W. – Robinson, H. (2005) What is the effect of a recommendation? *The Marketing Review*, Vol. 5 (2), 145–157.

Eid, M. – Diener, E. (2001) Norms for expressing emotions in different cultures: Inter- and intranational differences. *Journal of Personality and Social Psychology*, Vol. 81 (5), 869–885.

Ellsworth, P.C. – Smith, C.A. (1988) Shades of joy: Patterns of appraisal differentiating pleasant emotions, *Cognition and Emotion*, Vol. 2 (4), 301–331.

Éthier, J. – Hadaya, P. – Talbot, J. – Cadieux, J. (2006) B2C web site quality and emotions during online shopping episodes: An empirical study, *Innovation & Management*, Vol. 43 (5), 627–639.

Fagerstrøm, A. – Ghinea, G. (2011) On the motivating impact of price and online recommendations at the point of online purchase. *International Journal of Information Management*, Vol. 31 (2), 103–110.

Festinger, L. (1954) A theory of social comparison processes. *Human Relations*, Vol. 7, 117–140.

Filipowicz, A. – Barsade, S. – Melwani, S. (2011) Understanding emotional transitions: The interpersonal consequences of changing emotions in negotiations. *Journal of Personality and Social Psychology*, Vol. 101 (3), 541–556.

Fredrickson, B. (1998) What good are positive emotions? *Review of General Psychology*, Vol. 2 (3), 300–319.

Fredrickson, B. (2001) The role of positive emotions in positive psychology. *American Psychologist*, Vol. 56 (3), 218–226.

Frijda, N. H. (1993) Moods, emotion episodes, and emotions. In: *Handbook of Emotions*, eds. M. Lewis – J. M. Haviland-Jones – L. F. Barrett, 381–403. Guildford: New York.

Füller, J. – Bartl, M. – Ernst, H. – Mühlbacher, H. (2006) Community based innovation: how to integrate members of virtual communities into new product development. *Electronic Commerce Research*, Vol. 6 (1), 57–73.

Füller, J. – Matzler, K. (2007) Virtual product experience and customer participation – A chance for customer-centred, really new products. *Technovation*, Vol. 27 (6 & 7), 378–387.

Funches, V. (2011) The consumer anger phenomena: causes and consequences. *Journal of Service Marketing*, Vol. 25 (6), 420–428.

Grégoire, Y. – Tripp, T. M. – Legoux, R. (2009) When customer love turns into lasting hate: The effects of relationship strength and time on customer revenge and avoidance. *Journal of Marketing*, Vol. 73 (6), 18–32.

Guchait, P. – Namasivayam, K. (2012) Customer creation of service products: role of frustration in customer evaluations. *Journal of Services Marketing*, Vol. 26 (3), 216–224.

Ho-Dac, N. N. – Carson, S. J. – Moore, W. L. (2013) The effects of positive and negative online customer reviews: Do brand strength and category maturity matter? *Journal of Marketing*, Vol. 77 (6), 37–53.

Holt, K. – Geschka, H. – Peterlongo, G. (1984) *Need assessment. A key to user-oriented product innovation*. John Wiley and Sons: Chichester.

Howe, J. (2008) *Crowdsourcing: Why the power of the crowd is driving the future of business*. Crown Business: New York.

Jawecki, G. – Füller, J. – Gebauer, J. (2009) A comparison of creative behaviors in online companies across cultures. *Creativity and Innovation Management*, Vol. 20 (3), 144–156.

Jeppesen, L. B. (2005) User toolkits for innovation: consumers support each other. *Journal of Product Innovation Management*, Vol. 22 (4), 347–362.

Kwortnik, R. J. – Ross, W. T. (2007) The role of positive emotions in experiential decisions. *International Journal of Research in Marketing*, Vol. 24 (4), 324–335.

Laros, F. J. M. – Steenkamp, J. B. E. M. (2005), Emotions in consumer behaviour: a hierarchical approach. *Journal of Business Research*, Vol. 58 (10), 1437–1445.

Larsen, R. J. – Augustine, A. A. – Prizmic, Z. (2009) A process approach to emotion and personality: Using time as a facet of data. *Cognition and Emotion*, Vol. 23 (7), 1407–1426.

Lee, S. – Cude, B. J. (2012) Consumer complaint channel choice in online and offline purchases. *International Journal of Consumer Studies*, Vol. 36 (1), 90–96.

Lewis, M. (2010) Self-conscious emotions: Embarrassment, pride, shame, and guilt. In: *Handbook of Emotions*, eds. M. Lewis – J. M. Haviland-Jones – L. F. Barrett, 742– 756. The Guildford Press: New York.

Liljander, V. – Strandvik, T. (1997) Emotions in service satisfaction. *International Journal of Service Industry Management*, Vol. 8 (2), 148–169.

Lüthje, C. (2003) Methoden zur Sicherstellung von Kundenorientierung in den frühen Phasen des Innovationsprozesses. In: *Management der frühen Innovationsphasen*, eds. C. Herstatt – B. Verworn, 35–56. Gabler Verlag: Wiesbaden.

Mathews, S. (2012) Innovation portfolio architecture – Part 2: Attribute selection and evaluation. *Research & Technology Management*, Vol. 54 (5), 37–46.

Nagji, B. – Tuff, G. (2012) Managing your innovation portfolio. *Harvard Business Review*, Vol. 90 (5), 66–74

Öhman, A. (2010) Fear and anxiety: Overlaps and dissociations. In: *Handbook of Emotions*, eds. M. Lewis – J. M. Haviland-Jones – L. F. Barrett, 709–729. The Guildford Press: New York.

Papacharissi, Z. (2004) Democracy online: civility, politeness, and the democratic potential of online political discussion groups. *New Media Society*, Vol. 6 (2), 259–283.

Phillips, D. M. – Baumgartner, H. (2002) The role of consumption emotions in the satisfaction response. *Journal of Consumer Psychology*, Vol. 12 (3), 243–252.

Pitta, D. A. – Fowler, D. (2005) Online consumer communities and their value to new product developers. *Journal of Product and Brand Management*, Vol. 14 (5), 283–291.

Poetz, M. K. – Schreier, M. (2012) The value of crowd-sourcing: Can users really compete with professionals in generating new product ideas? *Journal of Product Innovation Management*, Vol. 29 (2), 245–256.

Rank, J. – Frese, C. (2008) The impact of emotions, moods, and other affect-related variables on creativity, innovation and initiative. In: *Research companion to emotion in organizations*, eds. N. M. Ashkanasy – C. L. Cooper, 103–119. Edward Elgar: Cheltenham.

Richins, M. L. (1997) Measuring emotions in the consumption experience. *Journal of Consumer Research*, Vol. 24 (2), 127–146.

Rozin, P. – Royzman, E. B. (2001) Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review*, Vol. 5 (4), 296–320.

Rucker, D. D. – Petty, R. E. (2004) Emotion specificity and consumer behavior: anger, sadness, and preference for activity. *Motivation and Emotion*, Vol. 28 (1), 3–21.

Sandes, F. S. – Urdan, A. T. (2013) Electronic word-of-mouth impacts on consumer behavior: Exploratory and experimental studies. *Journal of International Consumer Marketing*, Vol. 25 (3), 181–197.

Seybold, P. B. (2006) *Outside innovation. How your consumers will co-design your company´s future*. Harpers Collins Publishers: New York.

Shaver, P. R. – Morgan, H. J. – Wu, S. (1996) Is love a 'basic' emotion? *Personal Relationships*, Vol. 3 (1), 81–96.

Singh, J. (1988) Consumer complaint intention and behavior: Definitional and taxonomical issues. *Journal of Marketing*, Vol. 52 (1), 93–107.

Smith, A. K. – Bolton, R. N. (2002) The effect of consumers' emotional responses to service failures on their recovery effort evaluations and satisfaction judgments. *Journal of the Academy of Marketing Science*, Vol. 30 (1), 5–23.

Soscia, I. (2013) *Emotions and consumption behaviour*. Edward Elgar: Cheltenham.

Smith, A. K. – Bolton, R. N. (2002) The effect of customers' emotional responses to service failures on their recovery effort evaluations and satisfaction judgements. *Journal of the Academy of Marketing Science*, Vol. 30 (1), 5–23.

Solomon, R. C. (2008) The philosophy of emotions. In: *Handbook of Emotions*, eds. M. Lewis – J. M. Haviland-Jones – L. F. Barrett, 3–16. The Guildford Press: New York.

Strizhakova, Y. – Tsarenko Y. – Ruth, J. A. (2012) I'm mad and I can't get that service failure off my mind: coping and rumination as mediators of anger effects on customer intentions. *Journal of Service Research*, 15(4), 414–429.

Sullins, E. S. (1991) Emotional contagion revisited: Effects of social comparison and expressive style on mood convergence. *Personality and Social Psychology Bulletin*, Vol. 17 (2), 166–174.

Tinz, T. V. (2007) *Spitzenprodukte durch Spitzensportler? Kooperative Produktentwicklung bei Sportartikeln. Zürich*. Dissertation der Wirtschaftswissenschaftlichen Fakultät der Universität Zürich.

Tuzovic, S. (2010) Frequent (flier) frustration and the dark side of word-of-web: exploring online dysfunctional behaviour in online feedback forums. *Journal of Services Marketing*, Vol. 24 (6), 446–457.

Verhagen, T. – Nauta, A. – Feldberg, F. (2013) Negative online word-of-mouth: Behavioral indicator or emotional release? *Computers in Human Behavior*, Vol. 29 (4), 1430–1440.

Veryzer, R. W. Jr. (1998) Key factors affecting customer evaluation of discontinuous new products. *Journal of Product Innovation Management*, Vol. 15 (2), 136–150.

Von Hippel, E. (1986) Lead users: A source of novel product concepts. *Management Science*, Vol. 32 (7), 791–805.

Ward, J. C. – Ostrom, A. L. (2006) Complaining to the masses: The role of protest framing in customer-created complaint web sites. *Journal of Consumer Research*, Vol. 33 (3), 220–230.

Wetzer, I. M. – Zeelenberg, M. – Pieters, R. (2007) Never eat in that restaurant, I did!': Exploring why people engage in negative word-of-mouth communication. *Psychology & Marketing*, Vol. 24 (8), 661–680.

Wood, S. L. – Moreau, P. C. (2006) From fear to loathing? How emotion influences the evaluation and early use of innovations. *Journal of Marketing*, Vol. 70 (3), 44–57.

Yin, D. – Bond S. D. – Zhang, H. (2014) Anxious or angry? Effects of discrete emotions on the perceived helpfulness of online reviews. *MIS Quarterly*, Vol. 38 (2), 539–560.

THE FOLLOWING PUBLICATIONS HAVE BEEN RELEASED SINCE 2013 IN TURKU SCHOOL OF ECONOMICS PUBLICATION SERIES A

A-1:2013 Hanna Pitkänen
Theorizing formal and informal feedback practices in management accounting through three dimensions

A-2:2013 Samppa Suoniemi
The impact of CRM system development on CRM acceptance

A-3:2013 Kirsi Lainema
Managerial interaction – Discussion practices in management meetings

A-4:2013 Sueila Pedrozo
Consumption, youth and new media: The debate on social issues in Brazil

A-5:2013 Jani Merikivi
Still believing in virtual worlds: A decomposed approach

A-6:2013 Sanna-Mari Renfors
Myyjän toiminnan laatu kuluttajapalvelujen myyntikohtaamisessa – Ostajan näkökulma myyjän suoritusarviointiin

A-7:2013 Maria Höyssä
Where science meets its use – Exploring the emergence of practical relevance of scientific knowledge in the regional context

A-8:2013 Karri Rantasila
Measuring logistics costs – Designing a general model for assessing macro logistics costs in a global context with empirical evidence from the manufacturing and trading industries

A-9:2013 Taina Eriksson
Dynamic capability of value net management in technology-based international SMEs

A-10:2013 Jarkko Heinonen
Kunnan yritysilmapiirin vaikutus yritystoiminnan kehittymiseen

A-11:2013 Pekka Matomäki
On two-sided controls of a linear diffusion

A-12:2013 Valtteri Kaartemo
Network development process of international new ventures in internet-enabled markets: Service ecosystems approach

A-13:2013 Emmi Martikainen
Essays on the demand for information goods

A-14:2013 Elina Pelto
Spillover effects of foreign entry on local firms and business networks in Russia – A Case study on Fazer Bakeries in St. Petersburg

A-15:2013 Anna-Maija Kohijoki
ONKO KAUPPA KAUKANA?
Päivittäistavarakaupan palvelujen saavutettavuus Turun seudulla – Ikääntyvien kuluttajien näkökulma

A-1:2014 Kirsi-Mari Kallio
”Ketä kiinnostaa tuottaa tutkintoja ja julkaisuja liukuhihnaperiaatteella…?”
– Suoritusmittauksen vaikutukset tulosohjattujen yliopistojen tutkimus- ja opetushenkilökunnan työhön

A-2:2014 Marika Parvinen
Taiteen ja liiketoiminnan välinen jännite ja sen vaikutus organisaation ohjaukseen – Case-tutkimus taiteellisen organisaation kokonaisohjauksesta

A-3:2014 Terhi Tevameri
Matriisirakenteen omaksuminen sairaalaorganisaatioissa – Rakenteeseen päätyminen, organisaatiosuunnittelu ja toimintalogiikan hyväksyminen

A-4:2014 Tomi Solakivi
The connection between supply chain practices and firm performance – Evidence from multiple surveys and financial reporting data

A-5:2014 Salla-Tuulia Siivonen
“Holding all the cards”
The associations between management accounting, strategy and strategic change

A-6:2014 Sirpa Hänti
Markkinointi arvon muodostamisen prosessina ja sen yhteys yrittäjyyden mahdollisuusprosessiin
– Tapaustutkimus kuuden yrityksen alkutaipaleelta

A-7:2014 Kimmo Laakso
Management of major accidents
– Communication challenges and solutions in the preparedness and response phases for both authorities and companies

A-8:2014 Piia Haavisto
Discussion forums
– From idea creation to incremental innovations. Focus on heart-rate monitors

All the publications can be ordered from

KY-Dealing Oy
Rehtorinpellonkatu 3
20500 Turku, Finland
Phone +358-2-333 9422
E-mail: info@ky-dealing.fi