WIND OF CHANGE: A NEW WAY OF CUSTOMER INVOLVEMENT

By:
Diana Chernetska – 870511-2889
Steinthor Oskarsson – 780815-3733

Halmstad University, School of Business and Engineering, Management of Innovation & Business Development

Examiner: Mike Danilovic; Supervisor: Christer Norr

Abstract

This article investigates the evolution of a customer involvement concept and how Web 3.0 technology can contribute to it. We intend to answer the questions how do manufacturing companies involve customers into innovation processes, how they can benefit from Web 3.0 technology and we also rather general look upon adoption process of new tools. Information was obtained through executing intervention experiments in three manufacturing companies in the bathroom industry operating at the web 3.0 platform. The main part of the experiment includes ‘educational session’ by which we intend to create awareness about new Web 3.0 technology and observe changing perception of managers towards its possible use. We found out, first, that manufacturing companies mainly get ideas for new products from information deriving from their retailers, market surveys and fairs participation. Second, that Web 3.0 technology might be a complementary and alternative solution to traditional marketing research tools. Further, we drew conclusions and implications for both manufacturing companies and Web 3.0 technology providers. It was concluded that besides advantages of Web 3.0 technology over other customer involvement tools, Web 3.0 provides constant interaction between company and customers which is a valuable source for innovative ideas, thus, creating innovation in general. However, currently the process of new technology adoption is rather slow which is determined by a number of barriers discussed in the research.

(Customer involvement; interaction; Web 3.0; technology adoption)
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>NEW TECHNOLOGICAL ERA</td>
<td>2</td>
</tr>
<tr>
<td>THEORETICAL FRAMEWORK</td>
<td>4</td>
</tr>
<tr>
<td>CUSTOMER INVOLVEMENT</td>
<td>4</td>
</tr>
<tr>
<td>TOOLKIT AS A POSSIBILITY TO INNOVATE</td>
<td>10</td>
</tr>
<tr>
<td>EVOLUTION OF WEB CONCEPT</td>
<td>11</td>
</tr>
<tr>
<td>ADOPTION OF INNOVATION</td>
<td>13</td>
</tr>
<tr>
<td>METHODOLOGY</td>
<td>15</td>
</tr>
<tr>
<td>TECHNOLOGY DESCRIPTION</td>
<td>19</td>
</tr>
<tr>
<td>ROOM 328: A WEB 3.0 PLATFORM</td>
<td>19</td>
</tr>
<tr>
<td>HOW DOES THE TECHNOLOGY WORK?</td>
<td>20</td>
</tr>
<tr>
<td>ROOM 328: A WEB 3.0 PLATFORM</td>
<td>20</td>
</tr>
<tr>
<td>CURRENT WAY OF CUSTOMER INVOLVEMENT</td>
<td>22</td>
</tr>
<tr>
<td>HAFA BATHROOM GROUP AB</td>
<td>22</td>
</tr>
<tr>
<td>DUOBAD AB</td>
<td>24</td>
</tr>
<tr>
<td>TYLõ AB</td>
<td>25</td>
</tr>
<tr>
<td>PRESENT USE OF WEB 3.0 TECHNOLOGY</td>
<td>27</td>
</tr>
<tr>
<td>HAFA BATHROOM GROUP AB</td>
<td>27</td>
</tr>
<tr>
<td>DUOBAD AB</td>
<td>28</td>
</tr>
<tr>
<td>TYLõ AB</td>
<td>28</td>
</tr>
<tr>
<td>‘BRIDGE’: FROM OLD TO NEW UNDERSTANDING</td>
<td>29</td>
</tr>
<tr>
<td>CUSTOMER INVOLVEMENT THROUGH WEB 3.0</td>
<td>32</td>
</tr>
<tr>
<td>WEB 3.0 VS. CONVENTIONAL MARKET RESEARCH</td>
<td>32</td>
</tr>
<tr>
<td>ROOM 328 AS A TOOLKIT</td>
<td>34</td>
</tr>
<tr>
<td>WEB 3.0 AND THE LEAD USER CONCEPT</td>
<td>34</td>
</tr>
<tr>
<td>WEB 3.0 TECHNOLOGY AS INTERACTION TOOL</td>
<td>35</td>
</tr>
<tr>
<td>WHY ARE COMPANIES NOT ADAPTING WEB 3.0 TECHNOLOGY?</td>
<td>36</td>
</tr>
<tr>
<td>BARRIERS TO ADOPTION</td>
<td>36</td>
</tr>
<tr>
<td>ADOPTION MODEL</td>
<td>37</td>
</tr>
<tr>
<td>AIETA MODEL</td>
<td>38</td>
</tr>
<tr>
<td>CONCLUDING DISCUSSION</td>
<td>39</td>
</tr>
<tr>
<td>CONCLUSION</td>
<td>41</td>
</tr>
<tr>
<td>PRACTICAL AND THEORETICAL IMPLICATIONS</td>
<td>42</td>
</tr>
<tr>
<td>LIST OF REFERENCES</td>
<td>45</td>
</tr>
<tr>
<td>APPENDIX A</td>
<td>51</td>
</tr>
</tbody>
</table>
Introduction

Creation of new products is a way manufacturing companies sustain their growth and profitability. However, new product development is often not accepted by the market (Cooper, 1998). Many companies build their innovation strategy relying on the internal knowledge, meaning that all the product development process relies on internal resources. In this case, the innovation process might fail to follow the market needs. As mentioned by Gassmann and Wecht (2005), one of the biggest reasons of innovative idea failure is lack of market awareness, which can result in over-engineering. According to Chesbrough and Crowther (2006), companies must realize that good ideas can not only come from the inside of the organization but also from outside. Further, they suggest that companies should not rely exclusively on their own R&D (ibid). Gassmann and Wecht (2005) state that customers can play a significant role as an external source able to improve innovation processes.

In-house idea generation determines the manufacturer-centric innovation process, which implies costly market research with the focus group involvement. Also activities regarding product development are entrusted to an R&D department which is affected by internal knowledge, vision of the company and limited resources (von Hippel, 1994). However, it does not always mean that a developed, in-house product reflects exact customer needs (von Hippel, 1986). In fact, customers rather than manufacturers determine the tendency of the market and significantly contribute to the new product development (Shah, 1999) which makes customer voice worthy of consideration. Hence, it emphasises the importance of customer involvement.

Identification of main customer needs is a driving force for the innovation processes in the company (Urban and Hauser, 2003). Once a company actually decides to involve customers into the innovation process in particular on the early stage of new product development (NPD) (Gassmann and Wecht, 2005), it faces a variety of techniques to obtain the information about the customers, their needs and behaviour (Garver, 2001). By involving customer ideas into the innovation processes of product development, companies have the opportunity to get new ideas towards product development that only user of the product can develop over the time of usage. By using products, users surely identify advantages and disadvantages of the products. This is valuable information, which can be shaped into further innovations.

Currently, companies prefer to rely on conventional marketing analysis, yet it poses a question if conventional marketing analysis is efficient enough? Conventional marketing analysis might be limited by biased users as they are steeped in the present and cannot contribute to the novel product development. Qualitative marketing research with involvement of lead users, monitoring user groups and other methods are quite costly (Griffin and Hauser, 1993) and are also single feedback tools, meaning that deriving information represents customer interest at the time research was conducted. On the other hand, companies may fail to listen to the customers and understand their need in the right way which undermines a company’s innovativeness (Ulwick,
This importance lies behind the idea that ‘need’ information resides with the customers while manufacturers pose ‘solution’ information (Thomke and von Hippel, 2002). The process of collecting information is rather costly, inexact and basically is entrusted to manufacturers only. Yet, it does not always provide understanding of customers and eventually both producers’ efforts and resources could be just wasted (ibid).

Companies become more aware of the importance of involving customers into their innovation processes than it was a decade ago. Marketing researches are currently the dominant method to understand customer needs and for companies to discover consumer opinions about product issues and realising market trends. Marketing research is a costly process involving a specific range of information collected once for a particular purpose. This can prevent companies with low resources from conducting them (von Hippel, 1994).

**New technological era**

However, due to technological development, the business landscape is changing. Among the variety of opportunities for customer involvement, Web technologies provide outstanding possibilities of receiving reliable information without significant investments into market research.

Meanwhile, Internet development facilitates constant communication with customers, thus tracing their behaviour and obtaining information reflecting different combinations of customer needs. Web 3.0 is a next stage of sequential development of web technology. It is the next fundamental change in how websites are created and how people interact with them (Nations, 2011). It started with the Web 1.0 which is a term over the first basic website were users could read text and use hyperlinks. Web 2.0 followed with increased usability. Internet users could now interact through webpages, use online shopping, create own blogs and so on (Hayes, 2006). Web 3.0 is rather technology of the ‘future’ than the ‘present’ and in many cases it is at the stage of development, however its opportunities are already shaped. Web 3.0 implies convergence in new technologies and rapidly changing consumer buying trends (Tasner, 2010). This technology is considered as newly efficient in terms of speed, cost and accuracy, an alternative to conventional market research.

Room328 is an internet platform based on the web 3.0 technology. The platform allows users to sketch up their bathroom in 3D environment and select bathroom products from a database with over 30,000 products to customize their bathrooms. Over 80 bathroom manufacturers and suppliers operate at the Room328 platform. They provide 3D models of their products to the Room328 database with detailed product description for users. The program traces how users design in the program and what products they view or select. This information is collected and presented in the analytics part of the platform; and is available for customers of Room328 (bathroom manufacturing and supplier companies). This information reflects user interest in specific products and how they combine products from different producers as they sketch up
their bathroom. The platform has grown rapidly. In 2008 it counted 20,000 users but has grown up to 130,000 users in 2012 (see appendix 1).

Increased knowledge in this field gives managers of innovative companies a chance to learn and understand more about the nature of consumers and the market environment. This can increase competitiveness of the firm; and if technology is applied and used correctly, it might increase efficiency in meeting customer needs. This technology might be the tool of company innovativeness enhancement, as effective application of these technologies would favour the company innovation process. Nevertheless, some unexplained reluctance seems to prevent companies from using new technology and valuable information provided by the analytics tool (Johnson, 2010).

Researches in this field are limited. They are mainly focused on the customer involvement concepts, but not in context of internet technologies. As this newest tool is focused on the bathroom section and its customers are bathroom manufacturers and suppliers, we decided to investigate some of those companies to find out how they currently involve customers. We also investigated how they are currently using Room328 platform as being customers of Room328. Further, we aim to discover more about the opportunities this technology can provide to companies, in terms of customer involvement. As this new technology absolutely changes the landscape of current method of customer involvement, we also find it interesting to look upon its adoption processes. Undoubtedly, that technology adoption process would face a number of barriers and hindrances which might differ due to specific features of technology.

Investigation is based on analysis of three manufacturing companies operating in bathroom ware production segment. These companies have already been cooperating with Room328 for a few years and have had the chance to develop their cooperation and implement the technology into their processes. However, they fail to use Room328 analytics as tool of customer involvement into innovation processes. We want to identify what we can learn about innovation processes in the companies and how they deal with the technology.

For that purpose we find it interesting to investigate the process of current customer involvement and how manufacturers can benefit from Web 3.0 technology in terms of involving customers with a purpose of nurturing innovation in terms of product development. We want to compare web 3.0 technology to the past techniques and activities used to listen to the voice of the customers. Since Web 3.0 is disruptive technology, its adoption process might reveal new possibilities. This further gives a great opportunity to see how companies adapt to a new technology. Therefore, we suggest the three following questions:

How do manufacturing companies involve customers into the innovation processes?
How can companies benefit from Web 3.0 technology in terms of involving customers into innovation processes?
Why is the process of new tools adoption so slow?
Theoretical framework

Customer involvement

Concept description

Over the years there appeared to be a growing phenomenon towards shift of innovation to users. For a long time, the innovation system was manufacturer-centric (von Hippel, 1994). In other words, the manufacturer was the one who was working on the investigation of market needs, product development and all the required steps of the production. A set of quantitative researches conducted by von Hippel (1975, 1976, 1977) and others (Meadows, 1969; Utterback, 1971; Robinson et al, 1967) were to investigate the concept of customer involvement. The core idea of von Hippel’s scholar is the importance of listening to user needs, rather than relying on technological push. In the case of scientific instruments and equipment manufacturing firms, von Hippel (1976) stresses that it is always the user who identifies successful ideas, thus he claims the importance of an extension of user participation in the process of product development. Such a conclusion appears at odds with most previous studies (e.g. Marquis and Meyer, 1969; Booz, Allen and Hamilton, 1968) which assert that for successful development of a product, dominant role of manufacturer is a leading cause. Asch (1955) stated that customer involvement has been a major contributing factor to most companies.

The early literature in this field was mainly focusing on a business to business approach. Von Hippel (1975) stressed that industrial goods innovation projects which respond to a perception of user needs for innovation were more likely to successfully commercialize their products. Diffusion of information occurs via participation in symposiums, trade shows etc (von Hippel, 1975). However, it is possible if only company has a few customers, otherwise manufacturer won’t be able to consider variety of ideas and requirements. Von Hippel (1975) asserts the importance of constant information flow however, an efficient instrument was not suggested. A more recent approach has turned more towards relations between companies and consumers.

All the customers have needs which differ in some points, which determines a need for customization and listening to the customers. Such heterogeneity in most cases means that manufacturers won’t be able to meet all the needs and requirements (Luthje, 2002), thus manufacturers would tend to be focused on the customers that present a general market trend (von Hippel, 2005). Open innovation is another paradigm that describes the customer involvement in the innovation processes. It assumes that companies are able to use external ideas as well as internal ideas as the company looks to advance their technology or develop their products. It also refers to companies which can use internal and external paths to the market (Chesbrough, 2003). Thomke and von Hippel (2002) see the possibility of involving the
customer as an innovator. That is a way of listening to what customers want and responding by meeting their needs. However, the nature of customer involvement implies the listening of customers not only to match their current needs, but with a purpose for innovation. Currently, the main purpose of customer involvement falls to the need to identify current needs, thus avoid possible losses. Different tools and methods of customer involvement do not significantly emphasise and distinguish ‘involvement for innovation’. It creates a gap in understanding all the scope of customer involvement advantages and possibilities in terms of the innovation. Even if companies recognize significance of customer voice and involve customers into the product development process, it does not mean itself that such an activity contributes to the innovation process by default.

From the other point, users are willing to innovate more than manufacturers and facilitate development of successfully commercialized products (Morrison, Roberts and Midgley, 2004). Yet not all users offer the same valuable information for manufacturers to use. The majority of them do not have enough experience and are locked to the knowledge they have, which cannot contribute to the novel product development (von Hippel, 1986). It forces companies to seek users which could more significantly contribute to the product innovation process (von Hippel, 2005; Morrison, 2002).

Critical view on the issue of the customer involvement triggers an identification and emphasis on the innovative aspect which determines the main purpose of listening to the customer voice, as it is the focus of our research.

**Conventional marketing analysis**

Historic observation proceeded with listening to customers through traditional marketing research. Marketing research has been defined as a systematic way of gathering, recording and analysing issues that relate to marketing products. Its main purpose is to identify how changing elements in product supply influences customer behaviour (McDonald, 2007).

The nature of marketing research implies providing “systematic and objective identification, collection, analysis and dissemination of information for the purpose of improving decision making processes [... ]” (Malhotra, 1999, p.11). We emphasise the importance of these highlighted aspects: systematic and objective. However, what are the weak spots of marketing research which might impede a systematic and objective information flow?

Marketing research is usually conducted by a specific company in that field. However, a market research company has limited knowledge about customers whose behavior they investigate. Meanwhile, it lacks specific understanding about the company they conduct research for, and its activities (Johansson and Nonaka, 1996). The main tools used by marketers include surveys, focus groups, interviewing, storytelling, diaries, experiments etc., (Hoyer and MacInnis, 2001). We are not going to go in-depth with analysis of listed market research tools, since it is not a field of our interest. We rather attempt an identification of disadvantages of the listed tools in terms of reliability, costs, time aspect and accuracy.
The lack of knowledge and understanding of customers’ needs triggers companies to invest into market research. The high costs of market information comes as no surprise. That is why a company has to compromise, either possessing information about customer behavior or reducing costs. The information input costs affects the price of the end product significantly (Strader and Shaw, 1999). Moreover, it is rather costly to conduct marketing research at the very beginning of the new product development (NPD) process. After that, the process of further development is continued within the R&D department and innovation is turning to be manufacture-centric (von Hippel, 1994).

Accuracy remains the most important aspect when it comes to sales forecast. By referring to and analysing sales numbers, marketers try to predict future market trends (Kohli and Jaworski, 1990). We can claim its reliability in the case of unchanged conditions at the market. Indeed, a sales forecasting provides a company with accurate and reliable information about sales of existing products, however, it does not contribute to possible further product improvements and understanding new customers’ needs. The Innovativeness process does not benefit from past-facto sales information (Kinnear and Taylor, 1996).

The role of time aspect plays a crucial role as well. Basically, the analysis of sales, thus report is being released at the end of a year, half-year or, in the best case, quarter. It means that regardless of inefficiency of production indicated by low sales, a company would keep producing, marketing and selling the product (Deshpande and Zaltman, 1982). In the era of harsh competitive markets, time aspects cannot be undervalued as it might significantly undermine a company market position.

The aspects considered and discussed above makes us deduce that there is a need for constantly deriving relevant information. Moreover, the information should be collected directly from customers and reflect their needs and behavior, rather than being just generalized as a result of observing the behavior of a limited customer sample.

One of the most typical tools of customer involvement is focus group analysis. For that purpose, a company assigns a group of customers which are expected to express their ideas about the product (Morgan, 1996). The advantage of such an approach is direct customer involvement and listening to customers. However, how can a company ensure reliability of such information deriving from a small group of people? In other words, does a focus group represent and capture the variety of customer behavior and needs? The issue of reliability and objectivity of information undermines efficiency of traditional focus groups.

Thus, we infer that market research requires significant resources and R&D investments yet information could be ‘sticky’ to transfer and work with (von Hippel, 1994) or inaccurate, as it may reflect just a surface of customers’ needs (von Hippel, 1986). In any case, customers rather than manufacturers determine the tendency of the market and significantly contribute to the new product development (Shah, 1999).
Marketing research implies highlights that a manufacturer is active in attempts to identify customer needs. This is further stressed by von Hippel (1977) who criticises marketing research being efficient at the same level for both industrial and customer goods.

**MAP and CAP paradigms**

Von Hippel (1977) discusses two paradigms which determine the role of the manufacturer in the process of customer needs identification. The first paradigm so-called manufacturer-active paradigm (MAP) implies the situation when a manufacturer of consumer goods through market analytical tools tries to identify the needs of all the customers. In this case, customers are passive and do not contribute to the company’s innovative processes (von Hippel, 1977). This paradigm is relevant in the case of consumer goods. Focus groups, marketing surveys and other tools of traditional market analysis are techniques used by companies to assess customer needs and develop a product able to match those needs.

On the contrary, a customer-active paradigm (CAP) states that the customer is active in sharing the knowledge and ideas for new products with manufacturers interested in getting those ideas. However, the manufacturer is involving only one preferred customer which can highly contribute to the new product development (ibid.). This aspect already highlights some premises for the ‘lead user’ concept which was developed by von Hippel (1986). CAP appears to fit the industrial product idea generation process in which the new product opportunity is “accessible to manufacturer-managed action” (von Hippel, 1978).

Thus, considering our focus on consumer goods, we would like to come back to the tools used in MAP. Those basically refer to conventional market analysis. However, casual observation of the historical development of the ‘customer involvement’ concept enables identification of a lack of efficiency of marketing analysis tools.

*We can observe a clear distinction between the way of interaction for industrial and consumer goods. When it comes to consumer goods, only MAP occurs to reflect manufacturer-customer relations. In other words, customers are not initiators of sharing ideas for product development and manufacturers attempt to identify their needs, relying on different marketing research techniques and tools. If CAP could be applicable for consumer goods, it would open up a wide range of possibilities for companies to obtain direct ‘need’ information from customers which would facilitate product development and innovation processes. Nonetheless, CAP is relevant for industrial goods only and triggers development of a new concept - lead users- which implies efficient involvement of specific groups of customers in business-to-business (B2B).*

**Lead user concept**

Existing typical market research techniques enable only a skimming of the surface of the customer behavior and needs that impede correct focus of the manufacturers towards customer needs. Especially, such information cannot be reliable in the instance of innovative products.
Thus, a solution derives from analysis of ‘lead users’ as a specific type of the customers which determine future market trends. Meanwhile, von Hippel (1986, p.791) characterizes lead users as “[…] users whose present strong needs will become general in a marketplace, months or years in the future”. Lead users experience needs of the market earlier than the rest of the market, thus creating valuable information about the market trend for manufacturers (Morrison et al, 2002; Olson and Bakke, 1991).

Lead user idea generation methods are in line with conventional research methods, yet have a different approach to the searching for appropriate information, with the focus on lead users. Such methods intend to identify and explore future market trends and locus of most favourable ideas. Lilien et al (2001) claim the significance of the lead user concept, even for such an innovative company as 3M. This method comparing to conventional market research – as a need identification approach- facilitated identification of customer needs more efficiently. Moreover, this research indicated that users are more efficient developers of successful commercial ideas, as they are frequently better positioned than are manufacturers and possess precise need-information (ibid).

Thus, ideas brought by lead users at the leading edge of important market trends are to be incorporated into standard products mostly desired by the majority of lead users, which could be singled out into a new market trend (von Hippel, Thomke and Sonnack, 1999). Schreier and Präg (2008) stress the importance of lead users not only for the fuzzy front end but for more general product development and marketing issues. Lüthje (2004) identified that users tend to innovate not for commercial purposes but for private purposes. Moreover, they are not looking for a contact with a manufacturer, rather a manufacturer should be able to identify those needs.

The lead user concept was tested in different fields (industries) including medical equipment development processes by lead users (Lüthje, 2003); sports equipment where Lüthje, Herstatt and von Hippel (2003) claim the significance of users’ input into innovation processes in terms of precise needs reflection and costs efficiency; computerized systems for libraries (Morrison, Roberts and von Hippel, 2000) who supported innovation being likely concentrated among lead users. Being at the leading edge applies determination of such market trends which would eventually appeal to other users and provides a basis for manufacturers regarding new product development (von Hippel, 2005).

In any case, the lead user identification process is difficult to be applied for consumer goods due to the market scope (von Hippel, 2005). It is always easier to identify lead users and market trend when it comes to the industrial goods as a buyer basically measures the value of the new products in economic terms, which outlines the trend related to product value (von Hippel, 1986). On the contrary, it is not so obvious concerning consumer goods, as there is no comparison basis. In this case, customer behaviour is much influenced by subjective perceptions which are unlikely to be persistent over time (ibid).

*Referring to the researches conducted with the aim to test lead user theory proved its efficiency, however, remain limited to the industrial goods field as an industrial goods manufacturer has...*
basically a few or insignificant number of customers which facilitate easy identification of users at the leading edge of market trends (von Hippel, 1986). On the contrary, a consumer goods manufacturer may find it impossible to identify those users among all their customers. Even if a company assigns some focus group for analysis which might involve lead users, reliability of such an investigation can be impeded by sample representability. Yet, we cannot claim lead user concept being efficient and applicable for customer involvement when it comes to business-to-customers (B2C).

**Empathic design**

Previously, in the discussion we stressed the different techniques for B2B and B2C, yet some of them do not distinguish between consumer and industrial goods and can be applied in both cases. The importance of listening to customers has been already discussed from a historical perspective. But we face the problem that customers fail to express clearly their needs, moreover, they are locked into their knowledge and experience they have (McDonagh, 2008). Deep dependence on possessed knowledge might impede customers to look for/require new solutions. Thus, obviously there is a need for a set of techniques which may enable efficient listening to customers. These are called empathic design (Leonard and Rayport, 1997). Empathic design as a new approach to customer involvement and was introduced by Leonard and Rayport (1997). Thus, it is a relatively new way of capturing and recognizing customer needs. However, the lack of investigation in this field fails to make it applicable for all the industries, companies etc. Empathic design is a research method which adapts empathic techniques of social sciences (McDonagh et al, 2009) in the field of business.

It is relatively low-cost and low risk way to identify customer needs and might outline the direction of new business development. It could be achieved from the observation in the field; however, empathic designers use not only text and numbers to manifest new ideas, but also visual information (Leonard and Rayport, 1997).

In the research conducted by Leonard and Rayport (1997) it was found out that consumers tend to accept products in the way they are offered, regardless of whether they meet their requirements or not. The explicit reason is that customers fail to explain what they need, as was already stressed (ibid). However, in order to capture customers’ needs through observation of their behavior Leonard and Rayport (1997) noted five steps of empathic design:

- customer observation
- data gathering through visual, auditory and sensory cues
- analysis of data
- brainstorming
- development of prototypes of possible solutions

The limitation of empathic design is locked to the needs of an identified group of customers whose behavior should be investigated. This issue is pretty similar to lead user identification.
Moreover, empathic design – as a tool of customer needs identification - cannot be used in every case.

The concept of customer involvement was developing gradually over time, looking for more efficient techniques which would enable capturing the more reliable and accurate information. As we see, it moved from simple inquiry to observation of real behavior (Leonard and Rayport, 1997). However, some external changes, notably the Internet, took up the science, crucially affecting many business activities, including customer involvement and interaction. Development of a new toolkit enabled a gradual taking over from the traditional techniques of customer involvement.

**Toolkit as a possibility to innovate**

The phenomenon of user innovation and listening to the customers could not develop without ongoing development of such technical trends as constant improvement of design capabilities - so called innovation toolkit - driven by the development of computer technology, enabling customers to be involved in the innovation process; and the ability of users to coordinate and combine their efforts via the Internet (von Hippel, 2005).

Thus, we are talking about a need of such an innovative toolkit which could facilitate qualitative and effective customer involvement into the innovation process. Such a tool might attract more customers as they see the outcome right away that would reduce a feeling of uncertainty and frustration (Thomke and von Hippel, 2002). Of course, the toolkit wouldn’t satisfy every customer as it cannot handle technically sophisticated designs and options. Yet, in any case, it’s a great starting point for the manufacturers to start listening to the customers and consider their opinion to a high extent (ibid).

As a toolkit development is one of the main steps enabling customers to become innovators, it has to meet some requirements to be effective. Primarily, toolkits for user innovation should enable five objectives (von Hippel and Katz, 2002):

- **Learning by doing**

Very often manufacturers fail to deliver this option to the users. The toolkit should provide users with the possibility to design in the way that would meet their needs. It would enable users to get a clear picture about the product they are going to buy that would eventually reduce customer uncertainty and frustration.

- **Solution space**

Customer design should fall within their existing capability and degree of freedom embedded into a design toolkit. Of course, the degree of freedom in design may vary, depending on the product, but a cause of user innovation should always exist.

- ‘**user friendly**’ toolkit
Toolkit is the most effective if it is easy to use and doesn’t require any additional training or information to use. It would attract people to participate and eventually would provide manufacturers with a higher range of information.

- Module libraries

These are pre-designed modules which are frequently used which enable a user to be focused on customized details. A set of standard modules provides users with the ability to be totally free and creative in designing instead of focusing on details and components. Thus, such creativity contains a variety of new ideas which companies can use in the product development process.

- Convertibility of acquired knowledge into the production

Collecting information itself doesn’t necessarily mean being effective in listening to the customers. It is more important to select important information from the customers at the leading edge of the market and convert the customers’ knowledge into the production process.

Regardless of companies perceptions of the internet, its significance and role can’t be either ignored or lessened. Over a short period of time, the Web has developed to being an efficient tool with semantic characteristics enabling tracing personalized information (Verizon, 2010).

**Evolution of Web concept**

Web 1.0 is the term used to describe basic technology of the World Wide Web (www) that was released in 1993. The technology behind the Web 1.0 concept implies a variety of web pages that users can read and they included hyperlinks that connected the users to new web pages directly. Web 1.0 is basically a definition for the first internet pages that were used.

Due to technological refinements such as faster Internet connections (broadband), development in software and browsers, flash technology and online streaming e.g., a new definition derived, the Web 2.0. The term describes a variety of web pages and applications where users can create and share online information and materials. The core technology of Web 2.0 pages is creating, sharing, collaborating and communicating (Anon., 2008). Web 2.0 did not require that people designed their own web page, but could use standardized online systems to publish or communicate their work. Internet marketing took a big step forward through Web 2.0 technology. Flash technology allowed companies to present advertisements in a revolutionary way and the communication possibilities allowed companies to communicate directly with customers and obtain their feedback through web pages. With Web 2.0 online shopping also became possible. That has created the biggest consumer market in the world. The most known web sites using Web 2.0 technology are blogs, social media like, Flickr, Twitter, YouTube, Facebook, Google+ and online shopping sites like Ebay and Amazon.com etc (Digital inspiration, 2009; Garland, 2011).

The third generation of Internet technologies, Web 3.0, has recently been a hot topic. It occurs as a fundamental change in how websites are created and how people interact there (Nations, 2011).
Virtual shopping, avatars, 3D spaces and “second Life”-type of environments are already visible on the web (Garland, 2011). This technology, though, is still at the development level and specialists forecast exponential development of Web 3.0 technologies in forthcoming years (Garland, 2011).

New technology obviously possesses outstanding features in the field of customer involvement as well. It enables tracing a wide range of personalized information. Here we question if new technology can complement or even replace conventional market research in those points which we discussed earlier in this chapter as crucial (Table 1).

<table>
<thead>
<tr>
<th></th>
<th>Conventional research marketing</th>
<th>Web 3.0 technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>reliability</td>
<td>research agencies biases and approach</td>
<td>information derives directly from customers which emphasises its validity</td>
</tr>
<tr>
<td>accuracy</td>
<td>representative group error</td>
<td>represents the whole picture of the market</td>
</tr>
<tr>
<td>costs</td>
<td>high costs for research</td>
<td>relatively free, as comes as part of a platform presence package</td>
</tr>
<tr>
<td>time aspect</td>
<td>comes with sales numbers (quarterly, annual report)</td>
<td>immediate access</td>
</tr>
</tbody>
</table>

Table 1: Consolidated table of conventional market research and new technology comparison
Source: Authors’ elaboration

Despite the outstanding possibilities of web 3.0 technology and its advantages over traditional research tools, there still remain some barriers which affect technology adoption. It comes as no surprise that radical innovations in any sector (here we are talking about technology innovation) face significant resistance by companies which should adapt to it. This process is inevitable, as regardless advantages of new technology, risk and uncertainty concerning newness is slowing down the process of adoption. Currently we are talking about Web 3.0 technology which is considered as a technology of the future. Its development stage and deriving uncertainties prevent companies from smooth adoption. To provide valuable tips for technology adoption, we should first identify barriers to technology adoption and the current stage of this technology adoption.
**Adoption of innovation**

Any technological invention always faces the stage of adoption which might be influenced by different factors posing both positive and negative effects. The process of information technology adoption is critical to determine the advantages of new technologies (Parente and Prescott, 1994). The time aspect, together with a set of different causes concerning knowledge, resources, organisational aspects, etc., affects the adoption process (Karahanna, Straub, & Chervan, 1999).

**Barriers to adoption**


- **risk perception** is determined by liability of newness and high risk of technology adoption, which was not tested before. This can be due to requirements of investment in new resources or charges for the usage of these resources. This can easily create disincentive for participation;
- **knowledge deficit** is an especially sensitive aspect for SMEs which wait for early adopters to try and learn from the experience of others. The majority of organizations wait and see how the early adopters manage with the new technology;
- **trust** in new technologies, which significantly differ from traditional ways of doing business might dissuade companies from technology adoption. It is also affected by the level of knowledge about the technological benefits;
- **firm size** affects adoption, especially SMEs which are more sensitive to innovation adoption as the limited scope of business exposes them to a greater level of risk. Basically SMEs don’t have sufficient financial and technical resources for adoption;
- **organizational readiness** is determined by lack of organisational learning, accompanied by resistance to changes at both organisational and cultural levels. This barrier is very hard to overcome as corporate culture is difficult to change rapidly.

Thus, as literature identifies concrete barriers which prevent technology adoption. Affect of these barriers determines position of the companies at the technology adoption lifecycle. In addition, the role of time aspect should be stressed to a high degree.

**Adoption model**

Adoption of innovation is determined by an adopter’s attitude and acceptance of newness. Thus, referring to the degree to which the innovation is being adopted and considering standard deviation Rogers (2003) divides adopter distribution into five categories (Figure 1):
• **innovators** are driven by a significant interest in new ideas, which makes them adopt innovation at the very beginning of its diffusion, regardless of risk and other possible hindrances;

• **early adopters** help trigger the critical mass toward innovation adoption, as their leader position decreases uncertainty about newness;

• **early majority** adopts new ideas before any other average adopter, meanwhile presenting the critical mass of adopters;

• **late majority** remains a bit sceptical towards an innovation however, adopts innovation due to economic necessity;

• **laggard** represent a totally resistant group of adopters which remain loyal to traditional values and reject new ideas, referring to resource limitation and uncertainty.

Special attention is paid to the ‘chasm’ concept which represents a missed moment and opportunities of transition to the next segment at the technology adoption lifecycle (Moore, 2006). However, the chasm exists not only between *early adopters* and *early majority*. Cracks in the bell curve exist between all the segments, however, their influence on the adoption process is less significant (ibid).

Thus, according to the readiness and technology acceptance, companies might fall into different categories regarding their technology adoption attitude. Due to a set of reasons which eventually shape specific barrier to adoption, companies differ in their nature towards adoption processes. In process of time, this attitude is being articulated explicitly. Meanwhile, at the early stage of adoption it might be difficult to categorize the adopters.
AIETA model

To achieve product adoption, which is the main goal of the company striving to launch a product on the market, a company should assist customers at all stages, from awareness about product to its adoption. This would facilitate to overcome resistance to adopt innovation by the laggards (Rogers, 2003). While making a decision about product adoption, customers move through specific steps which shape their decisions and determine buying behavior (Doole and Lowe, 2008). The pace of adoption and movement from awareness to adoption depends on a product’s specific features (Barry, 1987). However, it might occur that a customer goes through few stages simultaneously or due to product specific features skip some stages (Lavidge and Steiner, 1961). Thus, according to Rogers (1962) the behavior of prospects and customers is determined at the following stages is accepted in theory as the AIETA model (Rogers, 1962):

- **Awareness** implies some knowledge about product existence but know nearly nothing about the product features;
- **Interest** articulates customers’ attempts to get information about the product;
- **Evaluation** implies comparison of price and advantages from using the product;
- **Trial** occurs when customer has a chance to use the product and is able to experience its features and real value;
- **Adoption** as a last stage implies large-scale use of the product.

Thus, one cannot expect customers to adopt a product if they don’t have enough knowledge and experimental support to make an adoption decision.

Hence, we observed the historical development of the ‘customer involvement’ concept. Besides this concept investigation, we stressed ongoing web evolution as it affects customer involvement through efficient techniques. In addition, we compare conventional marketing research tools with Web 3.0 technology to outline how new technology can complement or replace traditional ones. Web 3.0 technology adoption process is assumed being slow due to its early stage of development and thus, deriving barriers. It, to a large extend, determines the nature and attitude of companies to adapt to this technology at the current stage. However, we assume that regardless an early stage of Web 3.0 technology involvement, it is possible to smoother and speed up technology adoption process through creating awareness and indication of technology advantages for its adopters.

Methodology

The purpose of the study is considered as being explorative. We are dealing with an already existing concept of customer involvement and its development over time, which might determine the descriptive nature of the research, the main goal of the research is to bring awareness about new technology which facilitates efficient process of listening to customers. Since we focus our further research on this new technological concept, we claim our research is being explorative.
Research method

The Qualitative research method applied in this work is expected to enhance the research as it includes not only facts but also personal attitude of the research participants, their perceptions and opinions. On the contrary, quantitative analysis is dealing basically with statistical information and approaches explanation of the concept as an external phenomenon (Bryman and Bell, 2007), qualitative analysis would enable identification of individual relations explaining the internal nature of the concept (Aaker, Kumar and Day, 2006).

From the point of epistemological orientation, we find positivism limited for explorative analysis as social scientific laws might fail to explain social reality (Bryman and Bell, 2007). On the contrary, interpretivism enables us to involve subjective meaning of investigated notions since the concept of Web 3.0 was not investigated before, to the extent which would enable us to rely on facts and already tested theory and knowledge. Moreover, since we deal with human behavior in terms of adoption of new technology, we find interpretivism more suitable for this research.

As for ontological orientation of research strategy, we prefer constructionism to objectivism as we find categories being created through personal interaction rather than pre-establish (Bryman and Bell, 2007).

Companies selection

For the research, we selected three Swedish companies operating at the platform Room328 and selling their products internationally. They are suppliers of a wide range of bathroom products and have equal access to using information collected through Room328 analytics. Those are Hafa Bathroom Group AB, DuoBad AB and Tylö AB. After executing interviews with Cem Arel, CEO and founder of Room328, the decision was made to choose these companies as they have operated at the platform for a long time and all have access to Room328 analytics. However, they operate in different segments: Tylö and DuoBad operate in the premium segment, moreover, Tylö focuses on sauna and steam shower products; meanwhile Hafa positions at the medium price segment. Thus, we assume that a highlighted distinction between companies might extend the scope of our findings without compromising its validity and reliability. It should be noted that at the moment the experiment was conducted, Tylö had already terminated the contract with Room328 for using analytics which was explained as ‘we did not give us marketing we wanted’. However, we found it interesting to observe their critical opinion and see how it can be influenced and changed after executing the ‘educational’ part of the experiment. Thus, our study is focused on how those manufacturing companies can use this information in terms of innovation, we selected persons from R&D and from the marketing department for our interviews. Traditional market research is mostly performed by a marketing department within companies, often requested by R&D. R&D is also responsible for the product development, so the information contributes mainly to them. Besides, managers from those departments are involved in experiment as they also deal with this information.
Research strategy: experiment

A research strategy selected by the researcher represents a way s(he) will be answering the questions selected for the particular case (Saunders et al., 2007). The variety of strategies which could be selected Yin (2003) categories as case study, survey, experiment, archival analysis, and history. Research strategy selection depends on the set of conditions which can include (Yin, 2003):

- Type of research question
- The level of control the researcher has over the issue and events
- The degree of focus on contemporary or historical events

Considering our intention not only to explain the implications of the concept ‘customer involvement’ for particular companies, we want to examine how it is perceived by managers at the individual level and how the new web 3.0 solutions can facilitate this process. A Case study research strategy which could be selected for this type of investigation would fail to cover all the aspects of the problem. Notably, limited information would be collected through the only interviews execution, as all the investigated companies have no experience and limited knowledge in working with Room328 analytics. Therefore, it was preferred to make an experiment which combines both getting information from respondents, perception of current situation and observe changes in their behavior after the ‘educational session’ of experiment.

The ‘Educational session’ is a part of the experiment which includes an informative presentation for the team in each company which provides sufficient knowledge about importance and role of internet technologies in general and advantages of Room328 analytics in particular. Presentation includes a number of precise examples specially selected for each company, in order to visually highlight possibilities of Room328 analytics in terms of tracing customer information. The second part of the ‘educational session’ includes testing of the analytics program by a team. They were asked to open an analytics program, select the market they would like to retrieve information from, select their company and period they are interested in. After the selected information was displayed they were asked to point out advantages/disadvantages of this tool as well as what they would like to be improved for further more efficiency and usability of analytics.

While developing experiment structure, we significantly referred to the information provided by Mr. Cem Arel. Primarily, it was decided conduct two interviews with informative presentation intervention. However, to obtain accurate information regarding the very advantages/disadvantages and expected improvements of Room328 analytics program, it was decided to make a team directly work with program since we could not only collect verbal information at every stage of processing but also observe their step-by-step actions and reactions on every program feature. Since every team already had knowledge about the advantages of analytics, they were more attentive and precise about their perception of the program and further expectations.
Thus, a distinctive aspect of the experiment is that the researcher has manipulative control over behavioural events and focuses on contemporary events (Yin, 2009). Through intervention into the current way of the customer involvement process and understanding of the role of Room328 analytics, we changed the perception of the management team in each investigated company. Therefore, in the analysis part we distinguish between findings obtained before executing the ‘educational session’ and after.

**Experiment structure**

For understanding the issues of customer involvement applied by Tylö, Hafa and Duobad companies, it was decided to collect information through conducting an intervention experiment. During the pre-interviews with Room328, CEO Mr. Cem Arel enabled identification of some specific issues which - as we assume - could not be analysed through conducting interviews only. Notably, companies were not using current technological possibilities of the platform Room328 for tracing customers’ behavior and identifying their needs. In order to understand behavior and the attitude of companies’ managers it was decided to conduct an experiment with empathic design. For the experiment, each company assigns a team which is expected to include an R&D manager and marketing (or sales) manager.

The structure of the experiment is as follows:

- To avoid misunderstanding of the investigated concept ‘customer involvement’ by each team, at the beginning of the experiment we defined this concept, however, trying not to affect forthcoming answers.
- We developed an interview guide, which consists of two sets of questions: one is supposed to be presented at the very beginning of the experiment and another one at the end. Through the first set we attempt to identify the current managers’ attitude towards the Room328 technology, its possibilities and implications. Moreover, we also identify the current customer involvement in each company.
- Through the brainstorming, the team is expected to answer the questions. First, we do not provide any additional information and do not interfere in this session, aiming to identify the current perception of such issues as customer involvement and using Web 3.0 solutions.
- Thereafter, we proceeded with the ‘educational session’ - informative presentation about the advantages of Room328 analytics and how it can contribute to the company with real visual information gathered through access to the program provided by Room328.
- Next step of ‘educational session’ - ‘testing part’ when each team is asked to open the Room328 analytics program and try to use it in real time, pointing out advantages and disadvantages they recognize while working with it.
- Last step, a team is asked to answer contextually the same set of questions. The answers significantly differed from the ones received at the beginning of experiment.
Researchers compared results of both questionnaires and all three companies. Intervention and experimental findings result in two distinctive parts of an analysis which cover attitude, perception and activity of managers before they got to know Room328 analytics and after.

**Quality of research**

To achieve the quality of research we consider quality standards. However, due to the research specification concepts of validity and reliability are not applicable in this case. The quality of experiment is very much dependent on extensive empirical findings and level of control over events and variables.

An explorative nature of the study makes us strive for collecting comprehensive empirical information. For that purpose, we performed the experiment in three companies which are present at the platform Room328. They are working in the same area of sanitary ware and bathroom furniture production. During the pre-experiment data collection process through the executed interview with founder and CEO of platform provider Room328, Mr. Cem Arel highlighted serious problems in understanding the value of the technology by investigated companies. In each company assigned team consisted of participants holding the same positions: R&D manager and marketing manager. This would ensure obtaining the same findings from each company in order to compare behavioral patterns in each company regarding the issue of customer involvement and Web 3.0 technology usage.

Empirical findings are supported by theoretical observation of customer involvement concept and Web technology development overtime. We look upon which of the conventional techniques of customer involvement were used by companies and how companies use advantages of current Internet technologies.

**Technology description**

**Room 328: A web 3.0 platform**

Room 328 is a Swedish company founded in 2000 by employees in Stockholm, Istanbul and Lisbon. Room 328 provides an internet platform where users can design their requested bathroom with access to a database of products from about 80 bathroom product manufacturers and suppliers all over the world. It also provides a possibility for home furnishing companies to meet under a single bathroom concept, to simplify and improve access to this market. Here users can find all the important and required information about products, services that they can use for their own design and customize their bathroom solutions (Room328, 2012).

Researches show that 8 out of 10 customers start their interior design projects with searching the web. Thus, Room328 strives to become a starting point for users in this case. It is supported with a great variety of products and solutions provided by different bathroom products manufacturers.
presented under the concept Room328. The mission of the company is to unite all the world furniture and bathroom providers involved into the interior design (Room328, 2012).

An important point which distinguishes Room328 from the other companies is a using of web 3.0 technology. The company brought 3D interior design online and developed a toolkit enabling users of the platform to create own solutions for bathrooms.

**How does the technology work?**

**Room 328: A web 3.0 platform**

Room 328 is a Swedish company founded in 2000 in Stockholm, Istanbul and Lisbon. Room 328 provides a web platform where users can design their bathroom with access to a database of products from different bathroom product manufacturers and suppliers worldwide. In the web page users can find the important and required information about products and customize their bathroom solutions (Room 328, 2012). Source not correct The platform thus provides a possibility for different home furnishing companies to meet under a single bathroom concept.

The platform Room 328 has two main functions. The first one implies a form of tool where users can design their optimal bathroom in an online 3D program and select from a database of approximately 30,000 bathroom products from 80 companies. The second function of Room328 is an analytic tool for bathroom product manufacturers and suppliers. There suppliers provide the Room328 platform with 3D models and pictures of all their products and all necessary information about each product. Suppliers also have access to the analytics part of the platform. They can analyse how many times every product has been looked at and how the products are used in the design projects online.

In the online design, users can set up requested space (their bathroom) in 2D along with other dimension. From that data the program creates a 3D model of the space (bathroom) and allows the user to view the room from different angles. It further allows the user to decorate the bathroom by using the product database, mentioned above. The product database contains all common products that are used in bathroom design, from floor and wall materials up to furniture and sanitary wares. This database contains pictures and 3D models of all these 30,000 items. The items are dragged into the 2D drawing and placed in the preferred position. The user will have a 3D picture of the designed bathroom and from there its possible to make further changes or adjustments. The user design project is saved and stored in the Room328 database and visible to all other users and customers of Room328. One of the advantages of the platform is the accuracy of the virtual 3D design tool. The following pictures show how similar 3D design printout is to real picture taken from the same bathroom.
The similar images show same bathroom. To left is a virtual 3D printout from Room328 design tool and to right is a real picture of the same bathroom. The images show how accurate the 3D design tool is.

The platform analytics provides an easy-to-use interface for the users. The program also keeps real time statistics on how often each product is saved in a design project and also how often each product is viewed. Each product is only counted once in each design project, regardless of how often the same project is changed and re-saved. Information from the saved online designs can be organized by different countries, depending on where the users come from, by different brands (bathroom manufacturers) and different time periods up to the current day. This information can be sorted in various ways, e.g. by most viewed products or by most used products in design projects (saved in user-projects). The analytics is presented in two ways. First it comes in chart form, where the number of page views and project saved are presented, by a preselected time-period, brand and market. By changing any of those variables a new chart results will appear. Secondly it provides the information as a list of products from any preselected brand. Bath room suppliers can find out what products are mostly selected also from competing brands.

Images above show Room328 analytics. Left image shows a chart of how many times Hafa products were generally viewed in the program and saved in design projects by users during preselected period. The right image shows a statistic for each Hafa product, notably how often they were viewed and saved in a design project during same period.
Current way of customer involvement

We will start our discussion by linking empirical findings from three companies to theoretical concepts to investigate the current process of interaction and listening to customers and how it could be enhanced through web 3.0 technologies.

Hafa Bathroom Group AB

Company background

Hafa Bathroom Group is a Swedish company which supplies bathrooms in flat packages since 1962. According to small and medium-sized enterprises (SMEs) definition (European Union, 2003) Hafa is a medium sized company. They strive to deliver good quality and design products at the right price. The company offers ten different series of furniture and an additional 1500 bathroom items, including everything from showers and massage baths to mixers and soap dishes (Hafa, 2012).

In 2005 Hafa AB acquired Westerbergs Badrum AB. A newly created group named Hafa Bathroom Group turned out to be the largest market player in this segment in Scandinavia. Since that moment, every year the company presents a new bathroom range e.g. Hafa Kioto and Hafa Quant (2006), Hafa Mizu (2007) etc (Hafa, 2012). The main focus is made on the R&D and design team which are responsible for new concepts development.

Being a one-stop supplier ensures fast delivery (less than one week) of purchases from a single central warehouse to the whole Nordic region. Moreover, significant focus is made on the quality of the products which make it possible to offer a five-year guarantee for all the products (Hafa, 2012).

Customer involvement

Conducting an experiment and observation of the company’s ways of developing ideas for product development enabled us to conclude that the company remains manufacture-centric even though recognizes importance of the listening to customers “we need to know what customers want, otherwise we do not have the right product for the market”. The theoretic concept implies the ideas development process is being concentrated in the R&D department (von Hippel, 1994). We could sense a clear contradiction in theoretical concept of customer involvement and how company interprets and perceives it. Though, the team unanimously claimed importance of customer involvement and that company cannot stay aside customer voice, the way they actually involve customers is seems unsystematic and selective. Meanwhile, Hafa delegates ideas development and selection process to its R&D department product and design council (PDC) which makes decision “ [...] they [PDC] decide if the look is ok and what they want; and if it is not ok, then we go back to the designer” and “if the product is ‘right’ for the market”. We were concerned how the company decides if the product is ‘right’ for the market. It means that PDC relies on inner gut in their decision making process as there is no iteration with customers during
the product development activities. In the best case, it might match customers’ current needs, while in the worst case it just reflects the surface of customer needs (von Hippel, 1986) and what might limit contribution to innovative processes.

Referring to the literature, even though the innovation process remains manufacturer-centric, there should exist some source of ideas or in other words, the R&D department should be driven by some ideas about future market trends, which according to von Hippel (1975, 1976; Meadows, 1969) might be efficiently solved by customer involvement. Customers can provide a company with ‘need’ information in terms of design and technical (quality) solutions however, CAP (von Hippel, 1977) is not applicable as Hafa operates in business to customers (B2C). It would ensure development of the product which would meet market demand or would start-up a new market trend. However, their R&D department is getting inspired by the design seminars, fairs and exhibitions which traces market trends set by other competitors. It was explicitly stressed by the company that they “look at competitors’ design and trying to do something similar”. It again supports our conclusion that product development remains in the competence of the manufacturer (von Hippel, 1975). Some random and limited market investigations through questionnaires seek to identify “what they [customers] want, how should next bathroom look like”. However, it does not imply interactive communication, rather one-way information flow with a limited contribution to innovation processes as only R&D “gives a request what information we would like to gain [through market investigation]”. Thus, R&D makes some glass ceiling for the customer input. Instead of trying to observe customer behavior in general and try to identify some future patterns, the company seeks and considers only some specific piece of information deriving from customers. Logically, it will not contribute to innovation processes and keep company locked to the current market situation.

Meanwhile, Hafa company makes attempts to listen to customer needs but they add up to getting information from retailers and wholesalers since Hafa believes they possess enough information as deliver products to end-users “they [salespeople] have a good understanding what customers want and what competitors are doing”. However, we question if information from retailers is reliable enough and if retailers’ process of listening to customers is organized or random. The team could not answer if information from retailers is reliable enough, how they obtain information in general and whether constant interaction takes place.

Special emphasis is made of the importance of sales numbers which reflect which products are more popular among customers and which less. However, it makes a company remain locked to the current situation and does not contribute to innovativeness, since keeps connection to an existing product range. Here again arises the time aspect issue (Deshpande and Zaltman, 1982) which is important for a company. A sales report for the current year is usually released at the beginning of next year, thus, on a wide scale, a decision regarding the product range might be quite delayed in time. We question why a company which values time uses techniques which are quite time inefficient?
Duobad AB

Company background

Duobad AB is a Swedish family founded, small size company - according to small and medium-sized enterprises (SMEs) definition (European Union, 2003). It is supplying bathrooms with a great range of products through exclusive collaboration with leading companies in producing products for bathrooms notably Recor, Costa Boda, Laufen, Villeroy&Boch and Cristina (Duobad, 2012). The company operates partially as an importer and reseller and also designs and produces bathroom items. The company is working in the premium segment where it holds a leading position. It operates in the whole Scandinavian market, however, most sales are made in Sweden and Norway.

Customer involvement

At the DuoBad company, the R&D type of idea development determines the innovation process as being manufacturer-centric (von Hippel, 1994). The main ideas derive from fairs, exhibition and trade shows but remains in the competence of the manufacturer (von Hippel, 1975). We should emphasize that Duobad itself does not exhibit its products, just observes ideas of other companies and traces their behavior in the market.

R&D department makes decision regarding product development “people there are very skilled when it comes to design” relying on their own opinion upon “you should like the product yourself”. Though, the innovation process at the company was determined as manufacturer-centric, it differs from other companies. This statement cannot be supported by verbal managers’ explanation but sensed during the experiment execution. Moreover, specific attitude was inherent in all the team members. While trying to analyse and understand it, we deduce that the company’s actions might be influenced and determined by positioning at the premium segment. Working with expensive materials and exceptionally solid wood and premium design makes a company dictate a trend and lead customers. DuoBad admits that their own design development requires significant resources, both financial and time (e.g. during 11 years of company activity only four series of products were developed which is determined by expensive tools), while it is easier to make a similar design to the competitors’ at the market. Thus, DuoBad takes into consideration the market trends already set by competitors and relies on inner gut in R&D processes, assuming that they possess precise information about customer needs. They develop the whole complete product line with a number of rather specific items which will not be a sale hit but rather to maintain the exclusive nature of the products and brand name.

The very process of interaction and customer involvement fails to indicate efficiency and real consideration of customer needs. Meanwhile, they do not refuse customer involvement in general but have unique approach in this case “yes, it is important to listen to customers but in a different way”. Again we are coming back to company’s exceptional market position: premium segment, limited development and production flexibility, brand name orientation prevent constant customer interaction with a product development purpose. The main emphasis regarding
listening and interaction with customers is made on after sales service, in terms of customer perception of the product or some extra requirements for installation. On the contrary, hardly any attempts were made to involve customers in the product development processes which is vividly articulated by the answer for the question, if company involve customer ideas into development process “no, not development, no”. According to theoretical observation, such behavior can undermine innovation processes (Ulwich, 2002) as customers possess ‘need’ information and determine market trends (Thomke and von Hippel, 2002). In other words, regardless of admitting of importance of customer involvement, the DuoBad company ignores reconsideration of its policy concerning this issue. One of the main ways of interaction is the random process of customer feedback collection during the fairs or exhibitions “at the fairs it is very important to [...] get impression from the customers”. Reliability of such information as well as sample representation might be called into question.

In this case, the customer involvement process cannot be categorized either as CAP, or MAP (von Hippel, 1977) since DuoBad neither directly seek for information from customers nor customers themselves provide company with information about their needs. It reflects limited level of customer involvement regardless of the way ideas are recognized.

As was observed, both Hafa and DuoBad rely on the information deriving from retailers as they explain “they [retailers] meet end users every day”. They do not recognize importance of information deriving from customers, therefore do not pay attention on the channels of collecting information. We could sense that the company sort of dissociates itself from interaction with customers, justifying that retailers are the one who directly deal with end users. It sounds rather as ‘an excuse’, than a reason for the lack of interaction. The company does not pay significant attention to the reliability of such information and this process rather remained as informal feedback. Considering traditional marketing research, even if DuoBad outsources research companies for market investigation, the main purpose of it is identification of customers’ perception of the brand. In other words, DuoBad pays a lot of attention to branding and promotion, as was concluded from experimental findings “it is very hard to decide if it is good or bad, but it is marketing”. It once more indicates company’s management attitude to rely on inner gut in decision-making process. The reason behind might also fall upon company size: DuoBad is a small company where managers working since the company set-up. They believe to have absolute understanding of the segment they posses and customer needs in it.

**Tylö AB**

**Company background**

Tylö AB is a leading company of the sauna industry. It is a medium sized company according to small and medium-sized enterprises (SMEs) definition (European Union, 2003). Exceptional focus on using high quality materials determined their position in the premium segment and focus on specific customer segment. Acquisition with Helo AB resulted in establishing a leading
brand name in the industry and expansion to shower and bathroom concepts. Tylö has its own production facilities in Sweden and Finland and a sales company in Norway. Tylö exports to more than 90 countries worldwide and have active sale agents in 55 countries (Tylö, 2012).

**Customer involvement**

Tylö recognises the importance of listening to customers and before any product is being developed “you have to ask customers in one way or the other so we can have the right product”. They seems to be concerned about customer needs identification. We do not think that the reason is high-end product development and production. The company conducts marketing research to identify customer needs, demand and situation in the market in general, which goes in line with the traditional marketing research theory (Johansson and Nonaka, 1996; McDonald, 2007). Such approach to listening to customers through traditional marketing techniques clearly reflects MAP (von Hippel, 1977). The company strives to improve existing products and development of better new products which could match customers’ needs in a more efficient way (Gassmann and Wecht, 2005). Tylö distinguishes between two sources of information: the internal one, coming from distributors and external- surveys conducted by research companies. However, the main focus in terms of getting market information is made on retailers “[interaction with customers] is done mostly through our distributors. They sell the product so they know what is sellable and not”. We agree that such approach is reasonable is you what to keep the track of existing market situation. But we question its contribution to innovation processes. Tylö believes that they possess the most reliable information as they directly interact with end-customers. Meanwhile, Tylö does not question the nature of distributor-customer interaction, in particular if this process is organized and a distributor constantly obtains reliable and market information. Another source of market information is the marketing survey conducted by research companies. Tylö outsource research companies to make specific surveys regarding e.g. steam products or control panels. In any case, information from customers is valuable for the company. Despite advantages of information, this source might fail in terms of providing market sensitive information which is the most valuable for innovation processes, since only specific and rare information which might be perceived as unimportant by a research company can be recognized by R&D department which has an absolute understanding of the product and their customer behavior patterns and needs.

The idea generation process is also enhanced by fairs and exhibition attendance (von Hippel, 1975). Information about competitors, their development and set market trends remains of great importance for a company. In general, the company remains manufacture-centric and in product development process prefers “relying on R&D department, retailers and information from fairs”. Thus, we question where is interaction with customers? Though Tylö wants to be an innovative company and remain ahead of competitors, it still has not realized importance of valuable information deriving directly from customers.
Hence, in line with marketing investigations, companies intend to identify the following aspects which might facilitate innovation processes: what they want, how should the next bathroom look in the future and how they design the bathroom. It means that companies invest in resources and spend time on identification of these issues (Strader and Shaw, 1999; Deshpande and Zaltman, 1982).

All investigated companies stressed the time aspect (Deshpande and Zaltman, 1982) as one of the most crucial determinants affecting product development and related activities. In this case they consider customer involvement as a time consuming process, instigating time and financial losses if the developed product fails to meet market needs.

**Present use of Web 3.0 technology**

Under web 3.0 technologies, here we imply technological possibilities provided by Room328 which was discussed earlier in this work. The main core of investigation of this question is identification of how companies are using this possibility. We discussed that the provision of analytical information can facilitate customer involvement and trace information about customer behavior in a favourable way.

**Hafa Bathroom Group AB**

According to CEO of Room328 company, Hafa most actively operates at the platform and uses provided tools. However, we found out that Hafa still considers Room328 mostly as a tool for customers to design their bathroom and attract their attention “it is [Room328] more or less just a tool for customers to design”. Another purpose is advertisement at the Room328 website and sharing the company’s information and catalogues “we do a lot of advertisement in the catalogue”. The question which we pose right away is why for design and marketing purposes only? Is it resistance to new technology adoption or lack of knowledge and/or other resources? A further experimental intervention clarified that the reason is lack of knowledge, understanding of technology potential and dealing with new tools (this issue will be discussed further down in the paper). Even when Hafa stresses the possible improvements of technology for more advanced use, still it concentrates on enhancing customer service rather than using information for customer involvement. In any case, Hafa is familiar with Room328 analytics, but was not using it for tracing customer information.

As derives from experimental findings, even though in Hafa they recognize importance of customer involvement, yet the main purpose is to match current customer needs. Company does not use customer involvement concept for innovation purposes as all innovative ideas are being developed and embodied by R&D department. Since company does not recognize opportunities of customers as innovators, it does not see the advantages and usefulness of Room328 analytics.
**DuoBad AB**

DuoBad started cooperation with Room328 at the very beginning of its existence. However, over time they switched to another platform, ‘Winner’ as that was more suitable for its retailers to use. The main usage of Room328 remains as an opportunity for customers to design their bathrooms and advertise the company “advantage of Room328 is [being] a community that could be used by end users to design and buy furniture” and brand “Room328 is a marketing window for our products”. As was already stressed, DuoBad does not involve customers into product development process, therefore, it comes as no surprise why Room328 is used for design and sells only. In general, not much attention is paid to using Room328 platform, in particular trying to discover and use its possibilities for business purposes. Rather passive attitude of user is clearly seen in the answer “we are there because our retailers want us to stay at the platform”. Winner operates as B2B mostly while Room328 is both B2B and B2C platform. Moreover, Winner does not provide an alternative solution for Room328 analytics. However, regardless of the recognition of unique possibilities of Room328, DuoBad fails to use them and remains single-minded in their way of doing business.

As for DuoBad, this company does not see any importance of customer involvement into innovation processes. We could sense such a manner being determined by a positioning at the premium segment. Thus, company creates innovation which - as they believe - will be far ahead customers’ expectations. Thus, at the current stage they do not recognize importance and value of customer involvement.

**Tylö AB**

Tylö uses Room328 exceptionally for customer design “mostly end users [design] while sitting in their homes or the architects”. For them it is a tool which increases customer satisfaction as they can get an idea how a new sauna or other sanitary ware would fit in the bathroom. It is important, since sauna and steam cabins are a very expensive purchase, plus Tylö positions in the premium segment, so that customers would require a lot of information about the final look before they make a purchasing decision. For the question if design possibilities is the only advantage of Room328 for the company, they stated “yes, I would think so”. It explicitly indicates limitations of platform usage by the company. It should be stressed, that initially the team participating in the experiment was rather biased against Room328. They have been already using Room328 analytics as statistic tool to see a number of users which might be considered as potential customers. In other words, the analytics was used to predict future sales. However, they claim Room328 to have a number of failures regarding sorting out the information (distinguishing between users, resellers, e-shoppers etc). Therefore, it is difficult to measure Room328 as a market channel.

The same behavioral pattern regarding customer involvement into the innovation processes was identified in the Tylö company. They explicitly stressed importance of customer involvement, however, not with a purpose to innovate, rather to identify current needs.
Thus, regarding the question of current use of Room328 as Web 3.0 technology, we could recognise the same pattern in all the companies, that it is mainly use for design, sells and marketing. And it is regardless the differences between companies which have been stressed before. We assume that the reason behind might be the same also and pose the same influence on all the companies. But what we can deduce exactly, is that companies had no knowledge about Room328 technological possibilities. They were not seeking information by themselves, yet Room328 company did not provide sufficient informative support of how this technology can be used and how to work with it.

In line with analysis of customer involvement techniques and referring to the literature previously observed, we consider emphatic design as being also one of the possible efficient techniques of customer involvement. Though we are talking about customer involvement through internet technologies, according to historical observations of the concept, companies missed employing a quite efficient technique of listening to customers.

Even though the empathic design approach of listening to customers is quite different from the approach of Web 3.0 solutions, they share some advantages. Leonard and Rayport (1997) find the advantage of empathic design to be low cost, low risk and that it identifies the needs of the customers. In addition, customer involvement with empathic design requires the physical presence of customers, where information is gathered through observation of their real behavior rather than inquiry.

In some points, the way of customer involvement provided by Room328 coincides with empathic design. While using Room328 design tool, customers are virtually present and their real behavior (saved projects) could be traced, gathered and used for product development. Comparing the advantages of listening to customers through empathic design and Room328 tool, both involve low costs and low risk of collecting wrong information, as it represents customer behavior directly without any distortion by third parties.

‘BRIDGE’: From old to new understanding

We can clearly observe the following pattern of the behavior of all three investigated companies: the source of ideas remain in-house. Moreover, all companies draw inspiration and ideas for design from fairs and exhibitions. It outlines the market situation as follows: all companies observe ideas of its competitors, which means that they remain locked to the same product features; of course according to the segment in which a company operates. Meanwhile, the customer remains outside the idea generation process. However, all companies stressed the importance of customer involvement and try to listen to customers in this or that way. Here we would like to question the efficiency of such customer involvement, which in fact does not affect the R&D process and can hardly contribute to innovativeness.
After the first set of questions we recognised a mutual pattern: all the companies regarding the differences of market positioning, size, attitude towards customer involvement and managerial aspects, use Room328 with a purpose of attracting customers by 3D online design tool. Since companies do not name particular reasons why Room328 analytics is not used, we assume that the lack of knowledge about it might be a reason impeding technology adoption.

To bring awareness and interfere current way of companies’ activities in terms of customer involvement, we proceeded with the experiment with an ‘educational session’ as was discussed in our methodology chapter. Since managers hold high positions within their companies, working within R&D and marketing departments, they all understand marketing and the value of receiving information from customers and users. It was presented how the program really works with focus on the analytic parts. Then we allowed the team to try out the analytics part and discussed how they perceive it. Finally we asked about their future plans with Room328 and how they think it will contribute to their company.

**Changed perception of Web 3.0 technology**

It was interesting to observe the teams’ reaction on our presentation and testing session. When asked about current cooperation with Room328 they all perceived this technology, as mentioned before, as a design tool for users and designers. When answering the second questionnaire after the ‘educational session’ their opinion about Room328 was changed. They all recognized opportunities to use the program further for their companies. They saw possibilities of involving analytics further to research users’ behaviour towards specific products.

Production manager at Hafa saw advantages of analytics “If we work with this tool correctly we can identify trends [on the market] much earlier. It looks like a very good advantage [Room328] if we know how to use it”. Hafa recognized potential of identifying how new products will achieve in the platform and try to estimate from that where the trends are moving “If we work with the tools correctly we can know trends much earlier” [...] “it [Room 328] looks like a very good advantage”. We could see particular interest in testing Room328 analytics. Managers were interested to see distribution of products in different projects and the correlation between number of page visit and products used in projects. Obviously, it is difficult to expect absolute technology adoption right away but we can assert our experiment being a powerful catalyst of technology adoption. During our experiment, the team at Hafa could also identify further improvements of the technology that could give them more information about the users and their actions “More detailed information about age and gender of users would help to improve it”. Furthermore they recognized more potential of this technology “When we put in products we also should have prices, this could help us to know how much people are ready to pay for the products and if they are choosing other products instead of ours due to the price”. It proves that if company suggestions are deployed, Room328 has all chances of being sufficient substitute to market research which fails to provide interactivity. Moreover, if they are asking “why
customers are choosing other products for the projects instead of ours” means that already here
they recognise which products should be improved and how customers expects their bathroom to
look like considering combination of products. For the company it is not just a bare information
that its product was not selected but an illustrated example of customer behavior which might
give a valuable hint and information for R&D. It was obvious to us that the team interviewed at
Hafa was impressed by the abilities of the technology. In fact, they seemed a little bit shocked
realising that they had this technology under their roof all this time but were not using it.

A team at DuoBad also stressed the importance of the analytics: “I think the analytics part [of
Room328] is very important”. They saw a new technology that they were not aware of. Further
they recognized that involving this technology and developing it within the company, might
affect the business and eventually lead to increasing turn over “I think our company can develop
its usage with R328 much further”. Despite the general positive estimation of Room328
analytics, for the current moment they remained a way less enthusiastic than Hafa. Perhaps, it
determined by company’s specific positioning and approach to developing and marketing the
product discussed earlier in the paper. They also saw further possible usability of the technology
that is not connected to development contribution, without stressing out in what way or how.

At Tylö they see that this is technology of the future and think it can contribute to them in the
following years: “…in the future we need something like this [Room328 technology]”. In fact all
the teams agreed that one of the biggest advantages of the analytics is the possibility to view
which specific products were saved in each user’s design projects “I think in the future this will
be a really good engine to see what the market trends are”. Tylö team recognized Room328
analytics being a tool of the future. They stated that this technology will replace existing methods
of identifying customer needs. Moreover, we have investigated three companies and each of
them had some ideas for improvements. Even Tylö - initially resistant to use Room328 analytics
- had concrete proposals. Though, they quit using analytics, ideas and opinions of this company
should be particularly important for Room328 business developers, as they used analytics,
recognised and well-defined pitfalls and problems and offer specific solutions based on trial
experience.

Moreover, testing part of the ‘educational session’ facilitated recognition of improvements
companies would like Room328 to implement with a purpose making platform more efficient.
The DuoBad team stress importance of access to consumers’ projects in which DuoBad products
have been saved “it is really interesting to which product consumers combine with our. Because
if they [consumers] buy competitor’s product but not our of the same series, then you have to
question yourself what is wrong with our product”.

31
Customer involvement through Web 3.0

After all, we have seen that Room328 facilitates tracing information deriving from users that can be valuable for manufacturing companies. It is therefore interesting to observe if this technology can really displace the traditional methods of collecting this information in one way or another by comparing those methods. Further, to see if this technology has any advantages over traditional methods.

As mentioned above in our discussion, the investigated companies use marketing researches or surveys to identify trends and other tendencies on the market. In Hafa they rely very much on information they collect from retailers through surveys since they are the one that meets the end customers. DuoBad and Tylö also rely on their retailers. Tylö’s retailers perform self-contained marketing researches specifically in their dominant markets.

However, Room328 offers this opportunity already now as any company at the platform can trace this information, get feedback from customers and observe the process of each project development. Companies can trace which products were saved, in addition, how people combine products from different companies in one project. It might give a hint for the company why, for particular solution, a customer selects a competitor’s product, but not the one from the Hafa/DuoBad/Tylö complete product line. If there are more such cases it is possible to identify some pattern of customer behavior and direct the company manufacturing process into the right path i.e., being focused on some products more than others from the product range as was discussed by Lilien et al (2001).

Web 3.0 vs. conventional market research

The definition of marketing research includes activities that resemble a lot to the possibilities of Room328 analytics. As defined by McDonald (2007) it is a systematic way of gathering and analysis of information related to marketing product and identifying how customers react to product supply. In fact, Room328 collects information from users in this way. By presenting it in the analytics, the information is presented in an accessible way and companies can investigate what products are most popular from their product line and competitors as well. As defined by von Hippel, the two main negative aspects of traditional marketing research are that it requires significant resources and R&D investments (1994) or inaccurate as it only may show briefly the needs of customers (1986). In fact our respondents stressed significant investments into marketing research. The R&D manager at DuoBad said about surveys “they are necessary, but they cost”.

One important factor of sales forecast is accuracy and reliability (Kinnear & Taylor, 1996). In terms of accuracy and reliability, Room328 has many advantages. In fact, all users are calculated in the analytics of Room328 while conventional marketing research only uses some specific focus groups or sample groups. Conventional marketing research is very often outsourced to another company. In that case the results go through the hands of a third party
which can affect and mangle the results as well as different methods can be used to conduct the researches. A Research company might fail to provide valuable and specific information about the customers, as it is lacking understanding of their specific needs and behavior as stressed by Johansson and Nonaka (1996). In Room328 the information is always collected in the same way and the companies can view them straight after they are saved in the platform. This gives Room328 an advantage in terms of reliability and accuracy.

Sale numbers of existing products are also an important factor (Kinnear & Taylor, 1996). As mentioned above in the analysis, the investigated companies use sales numbers to identify popularity of products and market trends which can contribute to product development. In the same way the analytics can show that kind of information. The project that a user saves in the Room328 database represents people’s interest in certain products. Moreover manufacturers will not be able to meet all requirements of customers due to heterogeneity (Luthje, 2002) as they will tend to find a general trend from the results. The High price of traditional marketing research triggers manufacturers to consider information from marketing researches for granted in order to make use of their investment. As information is constantly deriving from customers through Room328 technology, manufacturers are not under such pressure to analyse the information, rather keep it as systematic process used to influence R&D activities like design.

The time factor also plays a critical role in this case. As sale numbers are often presented over the period of several month, especially in big companies, those are really not up-to-date numbers to work with. The analytics from Room328 provides real-time numbers. It presents what the users are doing in the platform to the current minute they are viewed. The fact that the information in the analytics is real time information is therefore a great advantage. Von Hippel (1975) stresses the importance of constant information flow deriving from customers, though he did not suggest any instrument. In Room328, information is at the same time real time information and being saved constantly by users.

Malhotra describes that marketing research should express and provide “systematic and objective identification, collection, analysis and dissemination of information for the purpose of improving decision making process” (1999, p.11). In fact the Room328 platform is both systematic and objective. It systematically tracks the information deriving from customers. It also provides the user a systematic way of viewing the results in the analytics. When it comes to objectivity, it collects the same information from each and every customer and replies with information that can reflect the market situation.

As cited by von Hippel (1994) it is rather costly to conduct a marketing research at the very beginning of an NPD process. Marketing research is also often performed for each new product or product line. As derives from the experiment with Hafa, they conduct marketing research for each new product line. The company normally launches more than one product line every year so the cost for marketing research is additional to the development cost every time a new product line is developed. The cost for being a part of the Room328 platform is hardly comparable. Customers can access the analytics without limitations during the subscription period. Also, as
mentioned earlier, analytics in Room328 are constantly reporting the situation on the market, which is real-time information, while marketing research is only showing the situation at the current time it is being conducted.

**Room 328 as a toolkit**

Researchers have stressed the possibility of using innovation toolkits driven by customers as a way of turning customers into innovators (von Hippel, 2005; von Hippel & Katz, 2002). These kinds of tools can bring customers effectively into the innovation process (Thomke and von Hippel, 2005). Room328 is providing this possibility. As the users save their projects in the program it is constantly saving their ideas. These ideas can further be used by the bathroom manufacturers to elaborate on their innovations. Further, as shown in our theory part, von Hippel and Katz (2002) find few objects that toolkits should enable:

*Learning by doing* stresses that users should have possibility to design whatever meets their needs. In fact Room328 provides that. Users can choose out of a database of 30,000 product items, a *module library*, for their design project. As the program allows the user to combine items from diverse producers and gives them the possibility of placing them in a preferred position in the bathroom, it is giving the users substantial freedom in their design. This design part of Room328, the *solution space*, is seen as a rather *user friendly toolkit* as the requirements to use Room328 is a basic internet connected personal computer and no special computer skills are required. The limitation is though that users work with pre-designed products which are uploaded to the platform by the bathroom producers. Finally von Hippel and Katz (2002) find it necessary collect the information and use the preferred information in the production processes. The Room328 platform collects information in effective way and they are presented both through the analytics part and by enabling access to each and every design project saved in the database by the users.

**Web 3.0 and the lead user concept**

Since all the companies operate in the consumer goods sector, it is difficult to identify lead users which would lead the company towards new market trends as the theory on this concept discusses (von Hippel, Thomke and Sonnack, 1999). However, the lead user concept might be applied in a different way; since it is difficult to identify lead users for consumer goods (von Hippel, 1986), they can recognise some market leading edge which determines the general market trend as behavior of all customers can be traced at the platform (von Hippel, 2005). Tracing customers behavior might facilitate the identification of some groups of customers who design their bathroom in a different way and through customization features of the platform develop interesting and new solutions which were not elaborated by any other company before. Involvement of such information contributes to the company in terms of innovation (von Hippel, 2005).
Web 3.0 technology due to its technological features which differs it from previous Internet generation, Web 2.0, provides exceptional possibilities of customer involvement thought tracing different kind of information. This information can be sorted, categorised, stored and presented in a convenient to use form. It facilitates overcoming such an issue as ‘sticky’ information (von Hippel, 1994) when it is difficult to transfer or retrieve collected information. Being more precise, Room328 provides database of collected information right away and in easy-to-use form. It does not require any specific conversions, or technical processing.

**Web 3.0 technology as interaction tool**

During our research we realized a great advantage of Web 3.0 technology. Compared to traditional marketing research, which allows companies to collect data from customers, web 3.0 technology allows not only listening in one way communication, but rather interacts with each customer through the platform. Interactivity with a customer is a unique approach in researching the market and it provides a new way of thinking. When technology reaches its maturity and companies adopt it, it opens up many new possibilities in terms of customer involvement and interaction.

Interaction at the Room328 platform might be considered at different levels. On a wide scale, platform provides opportunities for interaction and business creation between platform providers, manufacturing companies, users. In addition, through the platform users might get access to some service providers. On a narrow scale, companies can constantly interact with customers by involving their ideas for innovative purposes. The technology allows companies to analyse the collected data from Room328 and what message it is delivering from users. Those messages can represent changes in market trends based on colours, materials and different product design. In continue, the company can respond to the market through the product supply or refinements of products, depending on how the information is analysed and interpreted. This is therefore an opportunity for companies to respond to customer input on their product innovation process.

Product managers at Hafa see the analytics in Room328 useful in terms of identifying market trends in the future. Specially they found it useful to investigate the response of users towards certain product lines and from that try to identify when is the right time to launch new products. At DuoBad they thought information about what products are most popular, can be valuable to them in terms of decision making for further product development “then you know more which line has the most interest at the platform, so can work with these products development or if no one looks at some products, it is much easier to take earlier decision about putting in or out some products”. It means that company will find it easier to identify leading edge of the market trends as they see which products have the greatest interest and how they are combined with competitors’ products in one project. As was already stressed, it is not just advantage in terms of numbers but access to visual interactive information which highly contributes to innovative ideas generation. As innovative companies usually try to follow the waves of market trends, this tool can help them to trace changing patterns of the market trends.
This technology can therefore also be identified partly as an open innovation. The fact that increased number of customers are constantly working on their designing in the program and information deriving at the same time to the platform, can be seen as open or even “live” innovation. Open innovation implies that manufacturer can use external and internal ideas for development of their products and use external and internal paths to market (Chesbrough, 2003). Room328 gives manufacturers opportunity constantly blend external ideas with their own in product design.

Company’s have the possibility to send out special email offers to customers which are interested in the company’s products while designing their bathrooms. By-turn customers have a possibility to send feedback to the company as this option is embedded into 3D design program developed by Room328. The technology also enhances interaction with specific groups of users which are the most active in terms of using products of particular company.

Why are companies not adapting Web 3.0 technology?

Barriers to adoption

Since all companies recognized potential of Room328 analytics after executing “education session” of the experiment, we want to investigate why they have not adopted this technology already. For that purposes we will consider and discuss five main barriers identified by Johnson (2010) that are impeding technology adoption within organizations:

Risk perception. All of the companies participating in experiment mentioned that lack of resources could be one of the main reasons why they are not using technology. This harmonizes with Johnson’s (2010) discussion that firm size can be barrier to adoption of new technology. This was also the case with DuoBad. With only four employees in their office, doing everything from marketing up to development of new products, leaves limited resources to be to new technology examine. The financial resource aspect also plays significant role here as companies recognized a need of hiring extra person to work with this technology notably Room328 analytics. This can therefore been seen as financial barrier based on risk. There can also be risk of early adoption to new technology, especially in case of SMEs which normally wait for others to try out technologies due to lack of resources to test technology before the technology is proofed to contribute to the company. The firm size can also pose a barrier based on knowledge deficits. This means that based on size of the company it lacks capacity and other resources to examine new technologies. The DuoBad case vividly proves the knowledge deficit existence “I think it is a little bit earlier to talk about that [analytics] because I was not aware of this analytics part”. Logical, that managers who had no knowledge about this technology before, will not shift to a new technology right away. Even they have received theoretical explanation, they need enhance their knowledge and gradually integrate into the company’s business process. Trust which in that new technology can replace traditional way of doing things can also be a
Organizational readiness is also a barrier. Product managers at Hafa directly pointed out the barriers standing on a way “resources! we do not have enough people to handle this and we do not have the knowledge”. Therefore, they need extra employee to work with this analytics and learn on it. But they have not been ready for that. All the companies have had their certain way of getting ideas for their development, as mentioned earlier in this paper, and in fact it is quite homogeneous among all the companies as mentioned. This has become a part of their organizational culture and manner of doing business. It is the way that these companies have worked for decades and to change that can be a difficult barrier to overcome and will not be changed rapidly.

Lack of resources seems to be quite big barrier towards adoption of the analytics of Room328. But this lack of resource can be found on different levels. Some companies are not performing any conventional marketing research due to lack of resources but others perform quite many market researches but need more resources to involve Room328 in to that process. It also seems that marketing and research of market is quite random process in case of one of the companies so resources are not allocated on steady basis for these projects.

The organizational readiness is also a big barrier. In the companies interviewed the contact person to Room328 was normally IT specialist or web master. That lead to that people with marketing analyse thinking and knowledge did not know about the analytics. This shows how the organizational culture and pre-adjusted way of doing things can make technology like Room328 analytics be left behind. Among those companies Room328 technology seemed to be handled as any other internet solution, so the task is given to the IT-specialist. This is also visible in our empirical findings. When answering some of our questions R&D people did not have specific knowledge about Room328 and therefore referred to IT-specialists.

From the other side, we can also think about how Room328 as a company is presenting the technology to its customers. They might not have presented well enough the ability that the program has to offer. They might also have communicated to people that does not understand the values of the analytics and therefore ignored it. If analytics are shown to marketing thinking persons it will most likely catch their interest, but IT-specialist might not realize the value of it. Here type of education and experience might play an important role.

**Adoption model**

Since we are talking about web 3.0 technology which is considered about being technology of the future rather than presence, we can not talk about maturity of technology. Thus, it might be difficult to determine the distribution of adopters and place them into particular category developed by Rogers (2003). However, we possess the information that none of companies is using analytics therefore, can deduce that there are no companies in the category of innovators.
and *early adopters*. From the theoretical point of view, it means that both *early* and *late majority* will not adopt this technology until someone has tried it before. Coming back to analysis of current behavior of companies operating at the Room328 platform, according to theoretical discussion behind each category, they fall into the category of *laggards* since resist to adopt analytics as new source of market information. They remain locked to traditional way of conducting business and sceptical towards radically new approaches. Meanwhile, on a wider scale investigated companies can not be considered as *laggards* since it contradicts normal distribution discussed in adoption model (Rogers, 2003). Peculiarities Web 3.0 solution notably its adoption impedes clear categorising of companies. We did not identify any of a company being at the category of innovators. It means that currently Room328 analytics adoption is at the very beginning of adoption process. It might claimed that current hold-up in the technology adoption process is perceived as the chasm issue. However, referring to complex findings from both technology adopters (supplying companies) and platform providers (Room328) we can deduce that Room328 technology adoption has not reached chasm yet. Rather we can state that adoption process fell through the crack between innovators and early adopters. Room328 analytics has not reached the number of users which would enable to claim technology being absorbed into the mainstream and reaching *early adopters* segment.

**AIETA model**

While conducting experiment in three selected companies we were trying to trigger adoption by bringing companies through stages from *awareness* to *adoption* as discussed in AIETA model (Rogers, 1962). Prior investigation ensured lack of knowledge about existing technology and its features, thus, we intended to break through with ‘educational session’ to create *awareness* and *interest* towards this technology. The information contained advantages of new technology comparing to traditional way of customer involvement and listening including visual examples with real time information about each company. All the companies expressed interest in Room328 analytics however, emphasized unreadiness to immediate adoption of this solution. The stage of *evaluation* is rather time consuming which implies development of understanding advantages of technology comparing to existing possibilities of customer interaction and involvement. The *trial* stage was embedded into our experiment as all teams were asked to try and test using analytics and identify what they find interesting/useful about it and what hinders them from using analytics as a main tool for customer involvement into innovation process. Despite a number of identified barriers and hinders towards adoption of this technology, experiment assured efficiency of AIETA model in terms of need to create *awareness*, *interest* and provide possibilities for technology *trial*. It facilitates overcoming such barriers towards adoption as lack of knowledge, risk perception and trust (Johanson, 2010). This what should be noted by Room328 as a technology provider trying to make companies to adopt new technology.
Concluding discussion

After conducting detailed analysis on the investigated issues in all three companies, we can outline and generalize our main findings to determine manner patterns of bathroom manufacturing companies and draw valuable implications for both Room328 (or Web 3.0 providers) as technology provider and manufacturing companies.

Linking mental theoretical model with empirical findings through execution of intervention experiment with emphatic design gave us a clear insight into the nature of companies’ activities regarding customer involvement. Conducted experiment enabled identification of interesting matters which could not be found out through only interview execution. Only intervention and educational nature of experiment enabled identification of barriers which impede companies from technology adoption. After presenting our research questions once more we would like to provide clear answers for giving insights into the current and possible ways of customer involvement outlining its advantages, disadvantages and hinders:

How do manufacturing companies involve customers into innovation processes?

All the respondents realised importance of listening to customers however, but they fail to involve them in an organised way. The process of listening which currently takes place in the company applies only random process of feedback consideration.

The findings of our work articulate that innovation processes in manufacturing companies are manufacturer-centric. The main ideas regarding product development are being developed by R&D department which basically rely on inner gut and general market situation. All the investigated companies draw up ideas from fairs where they observe competitors’ activities. Eventually they get locked inside ‘manufacture-centric box’ while getting inspired by the same ideas, copying them and developing product with minor changes which fit company’s product line. Innovativeness which might be triggered by customers’ ideas and let the company step aside of the box is excluded from R&D processes. Eventually listening to customers would enable company to set market trend itself rather than just follow pre-established one. Some opponents of such opinion might point out the innovation dilemma caused by being solely customer-driven. However, with ‘customer involvement’ concept we imply not attempts to meet customer needs but recognize some innovative ideas at the leading edge of the market.

Only in some specific cases they involve customers with the purpose to identify market trends or brand perception. Those restrained attempts are basically done through conventional marketing researches. In fact, none of investigated companies manifested customer involvement process being organized and customer-centric. Even though all companies had access to Room328 technology they are not using information deriving from customers which are traced with this technology.

How can companies benefit from Web 3.0 technology in terms of involving customers into innovation processes?
Web 3.0 technology is not fully developed yet. In fact, as mentioned earlier in this paper, it is the technology of the future rather than present. Even at the early stages of this highly potential technology it can be used in the purposes of involving customers or as stressed in analysis, interact with end-users. The current situation is that manufacturing companies mainly get information from end customers through retailers and traditional marketing researches are also used. This technology, however, gives them the possible to interact directly with the end-customers. The interaction can be systematic in many ways, i.e. as response to certain group of customers that shows same product interest. That can be presented as offers to end-users or suggestions for similar products. The possibilities are almost limitless and exciting project for marketing educated people to develop the usage of this technology further.

We can look upon the advantage of technology on a wide and narrow scale. On the narrow scale, companies can constantly and systematically interact with customers and trace what kind of products they prefer, how they modify them and combine with other products in one project. Considering that the number of platform users constantly increases, e.g. between 2008 and 2012 it increased by 13 times (Room328, 2012), reliability of such information increases respectively. Since customers possess ‘need’ information, as was already discussed in the paper, through Room328 design tool they can create the prototype the products they desire. This is a source of valuable information for creating innovative products. Vectorized system would enable high level of product modification and development. However, Room328 design tool is not introduced this possibility yet.

On a wider scale, not only bathroom suppliers but sub-suppliers through the access to end-user information can enhance their innovation processes. Since they are mainly product manufacturers, they might get ideas from customers regarding specific product design or features. Thus, here we talk about interactivity on a wider scale.

**Why is the process of new tools adoption so slow?**

When looking up on adoption of technology our aim was to identify the standpoint of manufacturing companies and how they are adapting to Web 3.0 technology. When it comes to hinders of technology adoption by investigated companies, we found a number of barriers which prevent shift towards using Room328 analytics as a main tool for customer involvement.

Lack of knowledge turned out to be the most significant hinders as respondents did not have or have very limited knowledge about Room328 and analytics in particular. It should be noted that intervention through ‘educational session’ changed attitudes and understanding of advantages and possibilities. Also here lack of competence requires additional financial resources for hiring person experienced and knowledgeable in this area. However, company size might be an obstacle towards this. Despite a number of aspects which still prevent using analytics on a daily basis as a source of constantly deriving customer information, managers highlighted potential and importance of this technology. However, in some cases management remain conservative
and narrow-minded in their perception of new technologies and their management style poses barriers towards technology adoption. Among adoption barriers immature technology increases overall risk for the company but it is just a matter of time which is a crucial aspect for adoption. Since this type of behavior is deeply embedded into company’s culture, it might be difficult to adopt to new way of thinking and doing business.

From the other side, we are able to draw interesting conclusions regarding technology provider - Room328. Obviously that this company is far ahead in technological development and solutions which stumble over market immaturity for adoption and significant changes. Companies still perceive high risk of new technology adoption. Room328 is being a first mover but currently it is difficult to talk about first mover advantages or disadvantages. However, market evolves quite slowly which is also reinforced by lack of education about technology. Thus, we can’t claim first mover advantages/disadvantages being decisive for Room328 at least at current stage.

**Conclusion**

In our paper we discussed advantages of Web 3.0 technology over other techniques of customer involvement. Further, we identified barriers impeding technology adoption and how to overcome them.

Web 3.0 technology enables innovation on a few levels. Firstly, it facilitate product development in terms of its incremental improvements as provides the information which products customers prefer and how they modify them in the scope of technology possibilities. Currently, companies use various marketing techniques for incremental product improvements. However, Web 3.0 technology not resembles them but surpass market research information in terms of time, costs, accuracy and reliability. Secondly, Web 3.0 provides opportunity for introducing vectorized system for design. It would facilitate customer creativity as they will be able not only pick standardised products from module libraries, but design own products. It would respectively provide companies with innovative ideas for new product development. Thirdly, Web 3.0 technology triggers development of new way of doing business through direct interaction of end-users with suppliers and sub-suppliers for drawing up ideas for innovative product development.

In general experiment showed that there is a hidden resistance in new tools of customer involvement adoption. The main problem which impedes adoption process is lack of information and knowledge about this tool. It was proved by execution of ‘educational session’ which indicated immediate change in companies’ perception of new tool and proved that education process can speed up or increase possibilities of adoption of new technology. It proves for companies to change their mindset and replace traditional ways of involving customers to new interactive on-line techniques, Room328 should provide sufficient support at all the stages of adoption in order to prevent resistance. Therefore, it requires a new business model which would capture the scope of new types of business.
However, technology is not mature yet and it prevents companies from trying it first and absolutely relying on this technique. We agree on that point, but claim companies getting prepared and start adoption process already now as they cannot from one side, stay isolated from new surrounding Internet-based technologies as they make all the other previous tools and methods of customer involvement obsolete; and from the other one, stay aside from interaction with customers who are the main source of innovation.

**Practical and theoretical implications**

*Theoretical implications*

*Line between B2B and B2C concepts is diminishing*

New technology facilitates elimination of the significant difference between customer involvement for B2B and B2C. As was already stressed in the literature, the most efficient way of listening customers for B2B is lead user concept. Meanwhile, it failed to be the efficient for B2C as the process of lead user identification could hardly be applied for consumer goods. In other words, it is difficult to identify users at the leading market edge for consumer goods.

Meanwhile, new web 3.0 technology provides exceptional opportunities of efficient customer involvement without compromising the time and financial resources with reliability and accuracy of retrieved information. Moreover, it was found out that Web 3.0 facilitates efficient and constant interaction as enables constant flow of information and feedback between company and customers. It can also contribute in terms of involvement other parties into interaction process to enhance business activity and efficiency.

*Customer involvement can’t be separated from Web development*

An observation of ‘customer involvement’ concept development from early 50’s to present days enabling concluding the following: in a particular point customer involvement practices crossed and merged with Internet technology development. So far only IT or media industries were practicing customer involvement through Web technologies. Yet considering the pace of Internet development and diffusion into different businesses, it could be assumed that sooner or later Web will remain a main tool for customer involvement and constant interaction.

*Significance of barriers towards technological adoption*

Another implications for academia could be made in the field of technology adoption. Though Johnson (2010) categories adoption barriers into five groups, we found out that *firm size* and *organizational readiness* have the most significant effect. All other barriers notably knowledge deficit, risk perception and trust (Johnson, 2010) derive from highlighted ones.

In addition, at the early stage of technology adoption it is rather complicated to identify the nature of adopter as their perception of innovation is difficult to be recognised and analysed. Though their manner might fall into the description of *laggards*, the real nature could be
hindered by particular barriers. It would be interesting step for the literature to focus on researching how managers can focus on overcoming barriers towards technological adoption.

**Managerial implications**

Since we deal with interesting case of so-called two-sided market, we’ll draw managerial implications for companies operating at the platform - as one side, and platform provider - Room328.

**Manufacturing companies**

Regardless companies’ willingness or resistance to shift to using Web 3.0 solutions, sooner or later web will overwhelm interaction activities as at current stage web 3.0 technology description implies personalization and enhancing of interaction activities. The ability of web to organize information contextually and present in an easy to use form provides advantages for companies in terms of accessing valuable information. Barriers which were separating companies from using web solution are diminishing and eventually web would become an integrated part of business activities. We don’t claim that companies already now should shift to usage of Room328 analytics, however, they should recognize its possibilities and get prepared to possible shift in the future. As was already discussed, time if a crucial factor for adoption and significant changes of any activity in a company but managers should use it wisely to overcome barriers to technology adoption notably seek for information about Room328 analytics and gradually embed it into company’s innovation process.

As conventional marketing research proves its limited efficiency over time, more and more business decision will be grounded on information deriving from web. At least, customers shifting towards active use of internet technology, thus, it would push companies to follow the same way. It is supported by gradually increasing number of Room328 users (Appendix A).

Web 3.0 can be claimed being business intelligence (BI) engine. It provides access to right information deriving directly from customers which is a valuable knowledge enhanced by its constant flow. However, companies should be able to seize this opportunity and develop ability of its usage. It supports right track of product development which enables to meet customer need not only at the existing level within particular product range but through recognition of innovative customers ideas move to the new level of product development.

**Web 3.0 platform producers**

Web 3.0 technology is quite recent and remains at early development stage. Toolkits based on the technology are therefore recently launched to the market and yet to be further developed and even standardized. Manufacturing companies are using methods that have been used for decades for catching customer voice. Platforms like Room328 can be seen as an alternative or supplementary tool for traditional marketing researches and therefore call out for a new way of doing business within these companies. Since it can be challenging to change old processes or
habits within established companies, the producers of Web 3.0 might have to focus on how they introduce the technology.

As mentioned earlier in this paper it were mainly IT specialist or homepage webmasters that were responsible for Room328 within the companies. During our investigation we decided to interview personnel from marketing and R&D department, since Room328 analytics would appeal mostly to them. In our ‘education session’ we really managed to catch interest of those people that did not know about the analytics even though all the investigated companies had been a part of Room328 for at least couple of years. This shows that Room328 has not manage to present the analytics in right way or to the right people. This conclusion goes in line with AIETA model discussed and applied earlier in this work. Room 328 should be focused more on creating awareness and interest about its analytics tool. Moreover, it would be useful to make bathroom manufacturer to go through the stage of analytics trial with assistance of person from Room328. It would enhance trust in program reliability and eliminate risk of usage failures. Room328 platform has many sides, and its easy to present it in many different ways. It has the customer designing part, it allows the companies to upload their products to the In the future more Room328 should put more momentum on presenting the analytics and then to marketing educated or marketing thinking personnel. The advantages of Web 3.0 technology over traditional market research could also be stressed out in terms of time, cost and accuracy.

**Cooperation**

In order to develop technology in an efficient way and standardize it, Room328 should cooperate with its customers (bathroom manufacturers). Adoption of such a disruptive technology requires significant support and assistance from platform provider. Otherwise companies will find that the risk of technology adoption overwhelms its advantages, what would lead to adoption resistance. During our experiment all the companies explicitly stressed improvements or further developments they would like to see in order to adopt Room328 analytics technique. We believe that when other companies are given more knowledge about analytics tool, they will also come up with accurate and concrete suggestions.
List of references


Appendix A

Number of Room328 users