Combining RFID technology with Social Media Marketing - A Value Network Analysis

ABSTRACT

The purpose of this study is to shed light on the nature of value creation in networks that create value by deploying radio frequency identification (RFID) technology in social media marketing. Thus far little is known about the characteristics of value creation through the combination of RFID technology and social media marketing. The paper analyzes a value network consisting of a RFID technology provider, software supplier, a sports center adopting the system and its end customers. The findings suggest that value creation in dynamic environments such as social media which is characterized by changing technology, requires deep collaboration between the suppliers as they need to develop value propositions which motivate end customers to be involved in the marketing. Also, due to the interactive nature of communication in the social media, the value created in social media is highly dependent on the end customer's motivation to be involved in the value creation.

Keywords

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INTRODUCTION

Radio Frequency Identification (RFID) technology has been typically used to improve supply chain and inventory operations (Kim, Tang, Kumara, Yee and Tew, 2008). Recently, however, RFID technology is beginning to emerge also in customer-facing processes improving the customer service (Lee, Fiedler and Smith, 2008) and RFID is suggested to provide new possibilities for tracking customers (Bayraktar, Yilmaz and Yamak, 2010). At the same time, Internet is offering new marketing possibilities and the interest in social media marketing is increasing (Trusov, Bucklin and Pauwels, 2009; Kozinets, Valck, Wojnicki and Wilner, 2010). Traditionally, RFID technology and social media marketing have been studied separately but this study aims to consider value created through utilizing RFID technology in social media marketing. RFID technology provides possibilities to track the customers (Bayraktar et al., 2010) as social media is a way to increase brand awareness and create long lasting customer relationships (Hoffman and Fodor, 2010).

Previous studies about value creation related to new technology in dynamic business environment have obtained value networks as a tool for the analysis (Parolini 1999; Peppard and Rylander 2006; Pagani and Fine 2008; Helander and Kukko 2009; Corsaro and Snehota, 2010). Models about value creating networks (Kothandaraman and Wilson, 2001; Ritter and Gemünden, 2004) and value system characterizations have been developed (e.g. Möller and Rajala, 2007; Möller and Svahn, 2006; Möller, Rajala and Svahn, 2005) which offer a theoretical foundation for value creation analyses. Thus, the value network is adopted to this study to capture the potential of combining RFID technology to social media marketing. The purpose of this study is to examine how RFID technology combined with social media marketing shape the value creation logic in value networks.

There are no existing studies discussing the value creation opportunities that can be achieved by deploying RFID technologies in social media marketing. Value creation possibilities in marketing communication provided by social media have been recognized at least in consumer markets setting (Mangold and Faulds, 2009; Hoffman and Fodor 2010) and the effects of new technologies on marketing are gaining an increasing amount of academic attention (e.g. Jayachandran, Sharma, Kaufman and Raman, 2005). Still, further research in social media marketing possibilities is called for (Kozinets et al., 2010) and there is only few studies considering the utilization of RFID in the customer-facing processes (Lee et al., 2008; Bayraktar et al., 2010). Thus, there exists a gap in combining the RFID technology to social media marketing and this is the first attempt trying to depict the value creation through RFID enabled social media marketing. The value creation is analyzed through the following research question:

> 1. What are the characteristics of value creation in a value network that deploys RFID technology in social media marketing?

We strive to answer the research question by analyzing the value network consisting of actors involved in the production and the use of a RFID enabled social media marketing system. The actors include a technology provider, software supplier, a sport center implementing the system and its end customers. The system consists of both RFID technology and social media marketing software which together solve companies' challenges in tracking customers, creating brand awareness and improving customer relationship management. The value

creation is studied through value network as it has proven to be an adequate tool for analyzing value creation in dynamic environments related to new technology (e.g. Pagani and Fine, 2008). We describe the value network and analyze what kind of value the system creates for different members of the network. The RFID enabled social media marketing system offers an interesting platform for value analyses as it combines RFID technology and social media marketing which both are emerging fields of study.

Our findings suggest that the value created through the RFID enabled social media marketing is extremely fragile due to the dynamic environment and the interactive nature of the marketing communication in social media. Thus, the value creation is highly dependent both on the system and software suppliers' collaboration and the end customers' value producing actions. The findings contribute to the value network literature (e.g. Parolini 1999, Peppard and Rylander, 2006) suggesting that the value in use perspective should be taken into account in value network theories and based on this, new models emphasizing the end customer's involvement in value creation should be developed. Also, the findings contribute to the discussion of social media marketing (e.g. Mangold and Faulds, 2009; Hoffman and Fodor, 2010; Palmer and Koenig-Lewis, 2009; Kozinets et al., 2010; Trusov et al., 2009) and using RFID in customer-facing processes (Lee et al., 2008; Bayraktar et al., 2010) by offering an illustrative example of RFID use in social media marketing.

The research is organized as follows. Firstly, we introduce value networks as a tool for analyzing value creation. Secondly, we review the existing literature on social media marketing and RFID technology. Thirdly we explain the methodology used in this study. Then follows an introduction and analysis of the value network of the RFID enabled social media marketing system. Finally, managerial and academic recommendations will conclude the paper.

VALUE NETWORKS

Value can be defined by multiple ways but based on the service dominant logic (Vargo and Lusch, 2004), the dominating value in use perspective argues that value is created in customer's processes from using the supplier's value proposition (Grönroos, 2006; Kowalkowski, 2011). In value creation literature a prominent shift has been the change of focus from linear value chain analogy (Porter 1985) to a more dynamic and complex value network thinking (Möller and Rajala, 2007; Kothandaraman and Wilson, 2001; Parolini 1999). A value network can be defined as a constellation which consists of organizations that create value through collaboration and share the benefits resulted by their joint activities (Anderson et al., 1999). Any business network can be described through activity links, resource ties, actor bonds and schema couplings (Håkansson and Snehota, 1995; Welch and Wilkinson 2002; Ritter, Wilkinson and Johnston, 2004). Correspondingly, a value creating network consists of a set of activities that are needed from the end user's viewpoint in order to create value (Parolini, 1999). More specifically, a network's capability to create value is based on its core competences which create the superior customer value and are maintained by the relationships between the actors (Kothandaraman and Wilson, 2001).

Value creation in a network context requires collaboration and interconnectedness between the actors. The relationships between network actors can be divided into three components that are business network connection; mutual commitment and mutual dependence which all together create a causal chain that results in value creation (Blankenburg Holm, Eriksson and

Johansson, 1999). The business connection is built on structural ties that consist of shared systems and processes and social bonds which are based on the interaction between people. The connection is stronger if there are many organization levels connected as then the parties are more willing to invest in the relationship (Blankenburg Holm et al., 1999). In the long run, these specific investments lead to increased dependence and commitment (Ganesan, 1994) and as the dependence increases also the network ties become stronger. Close network ties can be seen as network's resources and therefore, by improving the network relationships and increasing commitment and dependence, the network creates value for the end customer (Blankenburg Holm et al., 1999).

The network approach is needed to analyze value creation in settings in which all the actors of a network participate with their joint activities to the value creation. The fundamental steps of value net analysis begin with an identification of the consumption activities which is followed by an analysis of the value creating system (Parolini, 1999). The first phase of value network analysis includes also the identification of the network actors. The smallest network is a triad consisting of three actors (Halinen, Salmi, Havila, 1999) but networks can be limitless in the sense that they do not have clear boundaries (Håkansson and Snehota, 1995). However, the network under analysis can be limited by subjective boundaries in order to avoid too complex value network analysis (Parolini, 1999).

Value creation in a network context is challenging. Each network is different having its own characteristics (Möller and Halinen, 1999) and only through understanding these, the network can be managed. Also, each network actor is different which may hinder the value creation. Corsaro and Snehota (2010) have recognized that the differences of value perceptions are a source of major challenge in the value network. Sharing of the created value is another challenging task that causes dispute between the networks actors (Wilson and Möller, 1995) but is a crucial part of the joint value creation. Therefore, the value analysis is an important means of understanding the produced value and also a tool for sharing the produced value as it encompasses each of the network actor's viewpoints.

RFID TECHNOLOGY AND SOCIAL MEDIA MARKETING

Radio frequency technology is traditionally used for tracking and identifying materials on manufacturing industry and improving the production processes (Irani, Gunasekaran and Dwivedi, 2010). Most of the existing studies are related to the technological aspect of RFID and the ones that regard the utilization of RFID, focus on internal processes of a company or inbound and outbound logistics (Ngai, Moon, Riggins and Yi, 2005). Only recently, RFID technology's potential outside the company has been recognized and the first applications for utilizing RFID technology for example in customer service are evolving (Lee et al., 2008). Thus, there exist several uncovered possibilities for RFID utilization (Irani et al., 2010) and it appears that the applications that have been developed for service business and are still in their early phases of adoption (Ferrer, Dew and Apte, 2010).

From a marketer's perspective RFID technology is interesting due to its possibilities to collect real-time customer information. The potential of RFID technology in marketing has already been recognized but the real life applications are still waiting for a vast adoption (Bayraktar et al., 2010). Low adoption rates for RFID technology can be explained through

the lack of studies concentrating on the actual business or organizational application (Ngai et al., 2008). There are also some drawbacks of RFID technology which may hinder the spread of RFID applications and which must be taken into account. When RFID is used for tracking customers, there is always a problem with the privacy which as customers may feel uncomfortable by the fact that they are tracked (Heim, Wentworth and Peng, 2009). Thus, it seems that companies are reluctant to pioneer with the RFID technology and they are waiting for others to test the systems (Bayraktar et al., 2010). This suggests that integrating RFID technology to more complete customer relationship management solutions might help companies to adopt RFID technology.

Like RFID technology, also social media offers huge marketing potential. It is a promising way to reach customers and the user amounts of social media continue to grow. Social media consists of a large number of online forums such as blogs, discussion boards, chat rooms, product or service rating websites and social networking websites (Mangold and Faulds, 2009). In the existing marketing literature, social media has been studied mostly as a platform for creating and spreading word-of-mouth in blogs and discussion forums (e.g. Kozinets et al., 2010; Palmer and Koenig-Lewis, 2009). However, also social networking sites are attracting marketers as they are occupying increasing amount of space in the internet (Trusov et al., 2009). In social networking sites individuals can create a profile, show their connection to others and view their own and other's connections (Boyed and Ellison, 2008). Facebook is an example of social networking site which has more than 500 million active users (Dutta, 2010). Typical ways to share experiences with friends in social media include status updates, tweets, blog postings and online reviews of which Facebook relies on status updates. Companies can also have fan sites in Facebook and for example Coca-Cola and Pepsi have successfully used Facebook for building their brands and developing new products.

The benefits of social media marketing are vast. Using social media as a marketing channel can result in cost savings in marketing budget, better marketing research as well as increased brand awareness and deeper brand engagement (Hoffman and Fodor, 2010). In addition, social media is an effective channel for spreading word-of-mouth and for coproducing marketing messages together with the customer (Kozinets et al., 2010; Trusov et al., 2009). In addition, Colliander and Dahlén (2010) argue that social media is even more effective marketing channel than the traditional medias as social media can generate higher purchase intentions. On the other hand, social media marketing has also its drawbacks. Bad customer experiences spread fast in the social media and a company cannot control the communication because customers often have a leading role in communication in social media (Palmer and Koenig-Lewis, 2009).

Social media environment is dynamic and distinct by the interactive nature of communication which can create long term customer relationships (Hoffman and Fodor, 2010). These characteristics of social media shape the value creation constellation in social media marketing because the customers participate in value creation through their investments in the interaction. Value in use ideology and customer involvement in value creation has already been studied vastly in marketing (e.g. Grönroos 2006; Kowalkowski, 2010; Vargo and Lusch, 2004) but the setting is different in social media context. Even though, interaction and communication are emphasized in value co-creation generally (Grönroos, 2011; Payne, Storbacka, Frow, 2008), in social media setting the customers need to be motivated to use social media (Hoffman and Fodor, 2010) and unlike for example in service marketing customers are not automatically involved in the value creation. Therefore, the social media benefits to the end customer should be analyzed as social media marketing is profitable only if there are customers who are willing to interact.

The willingness to gain reputation and share experiences with others has been identified as the main motivators for people to use social media (Palmer and Koenig-Lewis, 2009; Boyed and Ellison, 2008). Thus, in social media marketing the entire network should focus to boost the end customer's social status in order to motivate the customers to interact. However, the people's personality has also decisive effects to the people's willingness to interact in social media (Correa, Hinsley and de Zúñiga, 2010) and the personality factors are beyond the value network's control. This emphasizes the end customer's role in the value creation.

To sum up the existing literature about value creating components of social media, it can be stated that the benefits of social media marketing to marketers has been vastly studied but the benefits for social media users is an under-examined field of study. (See Table 1). Based on the previous studies it appears that social media is beneficial to the marketer but there are only few benefits that social media marketing brings to the user.

Table 1. Social media marketing value components for marketer and user

Benefits for marketer	Benefits for user
- Customer reach (Trusov et al. 2009) - Channel for spreading word-of-mouth (Kozinets et al., 2010) - Brand awareness (Palmer and Koenig-Lewis, 2009; Hoffman and Fodor, 2010) - Cost savings in marketing budget (Hoffman and Fodor, 2010) - Better marketing research (Hoffman and Fodor, 2010) - Deeper brand engagement (Hoffman and Fodor, 2010) - Higher purchase intention (Colliander and Dahlén, 2010)	- gaining reputation (Palmer and Koenig-Lewis, 2009) - Sharing experiences with others (Palmer and Koenig-Lewis 2009; Boyed and Ellison 2008)

METHODOLOGY

A case study method was chosen as the aim of this research is to explain a real life phenomenon in which the investigator has little or no control over events (Yin, 2003). Case study method was considered as the best method for analyzing the value network because case studies are traditionally used for understanding the dynamics of single settings (Eisenhardt, 1989) especially when the phenomenon is difficult to quantify (Ghauri and Grønhaug, 2010). The unit of analysis is the value network that represents the single case to be studied and it was limited to consist of only the critical actors which include the Software provider, Technology provider, The implementing company and The end customers. The single case design was adopted as it fits for studies in which the case is unique (Yin, 2003). Also, the pilot phase of the social media marketing system supported the choice of single case study method.

As sampling is critical process of conducting a qualitative study especially in single-case studies which are vulnerable to biases (Miles and Huberman, 1994; Yin, 2003), the case was selected carefully. The studied case represents the dynamic environment and consists of relative small network which is possible to analyze and therefore is optimal for depicting the value components.

The primary data consists of semi-structured interviews which were conducted with representatives of all three companies belonging to the analyzed value network and also with selected end customers who use the system. Data was collected from all the network levels as two of the interviewed companies represent the supplier level and third company is on the first customer level implementing the system in this pilot project. In each company, a key manager was asked questions concerning the company's position in the network, the benefits they gain and the value which the network produces. Only the key informants (Kumar, Stern and Anderson, 1993) were interviewed from each company as all the network companies are small and the interviewed persons were the only ones in the organizations having enough information about the system. Data triangulation was used for reducing informant bias (Arksey and Knight, 1999) by asking the same questions from all the interviewees and then comparing the answers. The interviews in the companies lasted from one to two hours and in the case of two companies there was a second interview session in which the unclear aspects were clarified and more detailed descriptions about the value network were created on the basis of the first interview round. Company interviews were conducted in December 2010 and January 2011. In addition, 11 end customers of the value network were interviewed in order to create a full understanding of the value creation potential in the network. The end customers were chosen from the info meeting of the social media system system that was organized in January 2011 and the aim was to collect a purposive sample that best describes the usual group of customers in the implementing sports center. (See Table 2)

Table 2. Data sources

Actor in a network	Title of the interviewee	Duration	Date(s)
Software Provider	Marketing Manager	1 h 50 min	3.12.2010
		55 min	18.1.2011
Technology Provider	Marketing & Sales Manager	1 h 15 min	9.12.2010
Sport Center	Sport Center Manager	1 h 5 min	3.12.2010
		40 min	18.1.2011
End customers (11)	Customer		18.1.2011

Besides the 14 interviews, secondary data was collected from the companies' marketing materials and phone calls with the interviewed persons and the CEO of the software provider. The acquired data was analyzed by using qualitative data analysis (Miles and Huberman, 1994). More specifically, data was organized in themes in order to reveal the value components.

CASE STUDY: RFID ENABLED SOCIAL MEDIA MARKETING SYSTEM

The studied value network consists of actors which are involved in the provision and use of a RFID-based social media marketing system. The case network consists of the RFID

Technology Provider, the Software Supplier, the Sports Center, which adopts the system and the Sport Center's end customers.

The social media marketing system is based on RFID-technology and social media software. The RFID-reader of the system automatically recognizes the customer from the customer's RFID-tag equipped customer card and registers the customer's entrance into the implementing company's (in this case the Sport Center) premises. The Technology provider's server restores the information and sends it to Facebook with the help of software developed by another supplier (Software Supplier). More specifically, the information of customer's presence is updated on the counter display on the Sport Center's Facebook profile which shows the real-time amount of customers in the Sport Center's premises. With the end customer's permission, the system automatically sends also a status update about the customer's entrance into the Sport Center to the customer's Facebook profile. (See Table 3).

Table 3. The components of the system

Component	Task
RFID-tag	Enables the identification
RFID-reader	Identifies the customer and sends the information to the server
Server	Processes data
Social media	Uses data for marketing, increases the brand awareness

The collected data helps the end customers to avoid traffic at the sport center and to choose the optimal timing for their workout. The status updates create brand awareness for the adopting company and they can attract end customer's friends to work out in the same sport center. The collected data can also be used for customer relationship management in mobile or e-mail marketing, customer loyalty programs, rewarding frequent customers or measuring marketing efficiency. The system has potential to be implemented in several locations in which keeping record and sharing the information about people's presence could be valuable. For example, companies could follow their employees working time with the help of the similar system.

The value network activities created by the Technology Provider mainly relate to the system hardware. The Technology Provider provides the access control and hardware maintenance and also the data warehousing as the collected customer access information is restored on the Technology provider's server. The Software Supplier's value activities include building the needed software and designing the Facebook application. The implementing company which in this case is the Sport Center provides the system with the marketing information and interacts with the customers giving information about the offerings. Also end customers provide interaction but they also acquire new customers through their social networks. These value creating activities are the minimum requirements in order to operate the system and thus the value created for all these network actors must be analyzed.

Value for the technology and software providers

According to both the RFID technology and the software provider, social media offers notable potential for the supplying companies to expand their business. The potential for

using the data of customers' presence is endless and the system has many potential customers. Even though, there are possibilities to create new business with the system which combines social media and RFID technology and both of the supplying companies could create profit with the system, it was noticed that value creation is extremely fragile. Both companies supplying the system stated that the system can only work when the RFID technology provider and the software supplier work in collaboration. Companies are dependent on each other because the system cannot send information to social media without the software and the RFID technology is needed in order to collect the data. Therefore, even a slight dispute could cause the collaboration to fail and the value network to collapse.

Also the fast-changing environment sets challenges for the value creation. Both of the supplying companies' industries are dynamic as RFID technology is developing all the time bringing new products to the markets and the information technology is also developing at a tremendous pace. Today, Facebook is the place to target millions of people but tomorrow, there might be an even better channel which would require new software. As the technology provider stated:

> "*We need to be involved in everything new as we cannot know what the trend is for tomorrow. We need to collaborate as this system might be the one that breaks through*".

The rapidly changing environment can be seen as threat for value creation as either of the suppliers could find a better way to gain profits and focus their resources on some new system. Besides the dynamic environment, also the sharing of the profits may cause problems. At this point, the companies trust to collaboration but the business is still small and there are not remarkable monetary profits created yet. As the business expands, the companies need to start dividing the profits which may cause problems. Thus, the huge value creation potential causes also huge value sharing problem which together with the dynamic environment makes the value creation in the supplying level of the network extremely fragile.

Value for implementing company (Sport Center)

In this case the Sport Center did not have a large marketing budget and the social media had been the primary channel for communication. The limited marketing budget was one reason for the Sport Center to implement the system but, the most important motivator was the improved customer service. As the system allows number of users in the Sport Center to be checked from social media, the Sport Center can also help customers to plan their training timing better. For the Sport Center, it means offering better customer service. Besides, social media helps the company to engage its customers better as the system encourages customers to visit the company's Facebook profile in which the customers can find also other information about the Sport Center. The visibility in social media is not enough for bringing the profits but more is needed for value creation. As the Sport Center manager states:

> "*Of course we would like to gain more brand awareness but does it bring more customers to the Sport Center? This is a highly competed market and therefore we need to use all the possible ways to differentiate from competitors*"

It seems that the value creation does not rest only in increased visibility in social media but also in the real potential for gaining new customers. The Sport Center manager believes that the customers are best marketers to attract their own friends to the Sport Center and therefore the Sport Center is also willing to give rewards to those customers who would allow the automatic status updates.

"...for us, the real benefit is to get access to the customers' status updates"

The system is highly dependent on the actions of the end customers and the system manages to produce value only when the end customers are willing to share the information about their presence for their friends. Therefore, the value is produced in the interaction in which the end customer has an important role.

Value for the end customer

Except for one, all the interviewed customers were eager to find out the real time user amount of the Sport Center and thus, the system was seen as useful from their perspective. However, only four respondents out of 11 were willing to give the system rights for automatic status update. This is critical in the sense of value creation because not even the promised rewards removed the people's reluctance to share their presence. The main reason for this was customers' worries about their privacy. Sport Center's customers did not wanted to be followed by their friends and one customer even stated that the Facebook status updates could attract burglars because they state when the house is empty.

However, there are several social media systems such as FourSquare which already share information about people's presence and these systems have millions of users. Therefore, there should be users for the social media marketing system as well. The customers who were willing to share their premises were extremely pleased about the feature of automatic RFID tracking possibility and the automated status update.

"I wish this system could be used in everywhere I train….would it be possible to create training diaries with this system?"

Those who liked the automatic status update were not interested in the rewards that they would gain by using the system. For them the only reward was the easy way to praise their friends about their work out. End customers also mentioned that the knowledge that friends can easily see the amount of work out the people have, would probably motivate to work out more. Thus, the social status enhancement seems to be the most effective reward.

The value components arising both from the literature and from the case study are depicted in the Table 4. On the basis of the analysis, it seems that the RFID enabled social media marketing system produces most value for the company implementing the system. However, the value that the implementing company gets is dependent on the end customer's will to share information in social networking site.

Table 4. Value components for each value network actors

Value components for the system supplier	Value components for the software supplier	Value components for the implementing company	Value components for the end customer
- market potential - possibility to develop new technology	- market potential - possibility to develop new technology	- savings in marketing budget - possibilities to offer better customer service and differentiate oneself from competitors - new marketing channel - increased brand awareness - possibility to get new customers - information about customer visits - access control system	- better customer service - rewards for using the system - social status enhancement

A framework depicting the actors in the value network, their value creating activities as well as the created value components is presented in Figure 1. The arrows describe the value flows from which can be seen that the software supplier adds value to the technology provider's RFID-based access control system by enabling the use of access information in social media. As the end customers' have the option not to allow the system to update their social media status, there is only a possibility to increase brand awareness and acquire new customers with the help of social media status updates. Thus, the value created by the end customer is only optional. However, the social media system's ability to update the actual number of customers in the sport center to the company's social media site creates new kind of service for the customer and improves customer service.
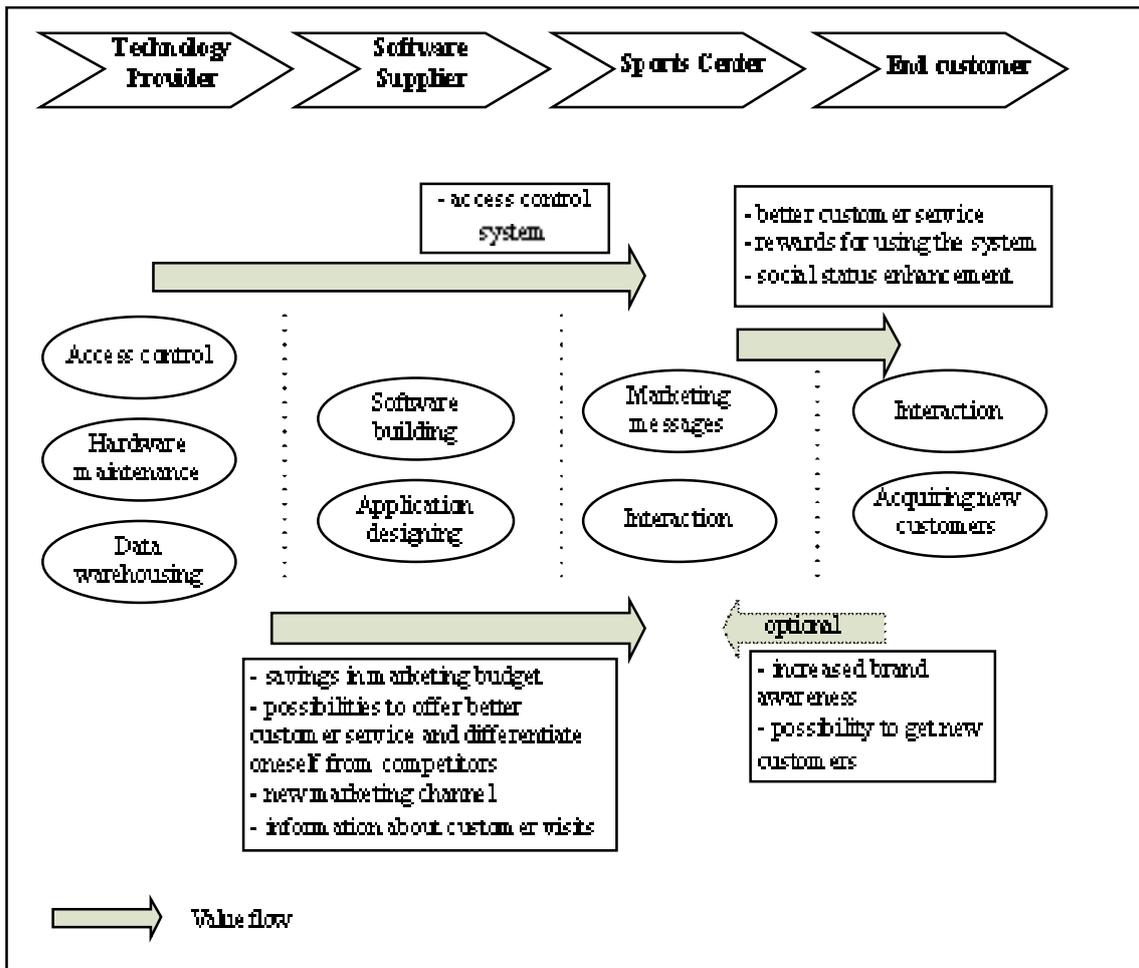
Figure 1. Value activities, value flows and value components

CONCLUSIONS

In the literature it was identified that social media is dynamic environment and the statement was also supported by the analyzed network's actors who argued that operating in social media especially with RFID technology requires collaboration in order to cope with the changing technology. This finding is supported also by the previous studies about value creation in dynamic environments which also argue that networks are needed to compete in dynamic environments (e.g. Parolini 1999; Peppard and Rylander, 2006). It appears that systems that have new technological elements such as social media and RFID technology are attracting customers but only if the customers still can control their privacy.

The value creation in combining RFID technology to social media marketing rests on interaction and is dependent on the end customer's willingness be traced and share information in social media. The marketer can only have new customers if the end user is willing to reveal their whereabouts to their social network. Thus, the case analysis reveals that customers' actions affect the value created to the supplier level. If end customer do not use the social media application, the advantages of having RFID access control is diminished. The value in this network appeared to be extremely fragile, firstly because of the turbulent environment that threats the relationship between the suppliers and secondly due to the

customers involvement in the value creation. The findings also indicate that the traditional value literature and value models do not fully depict the characteristics of value creation in the networks that are based on the utilization of social media because the traditional models do not emphasize the end customer's decisive role.

To conclude, the value creation in the network seems to be highly dependent on the value perceived by the end customers and their varying degrees of willingness to share information about them. Thus, the value creation is based on the network's ability to support the end customer's own everyday processes in using the social media marketing system and its services. The RFID technology eases the identification as it automates the identification process but still it seems that value is shaped by social forces that affect consumers' willingness to share information about themselves and the nature of the shared information. For example, the increased appreciation of health and physical fitness creates possibilities for consumers to enhance their social status through exercise-related status updates, which in turn, creates potential for fitness companies to engage their customers as co-marketers. These types of mechanisms have implications for value creation also at the network level.

Based on the research, it can be stated that RFID technology enabled social media marketing system is promising in offering new ways of marketing in social media. Also the services which the system offers for end customers are welcomed and they may offer significant competitive advantage which helps the service provider to differentiate from its competitors. This urges companies on adopting both RFID and social media in their premises because the technology itself may act as a differentiator. This system can help to create more brand awareness for the implementing company and it offers new services for the end customers as they have access to new kind of information.

The findings of this research contribute to the several discussions. Firstly, The results also indicate that the traditional models created for describing the value creation in networks (e.g. Blankenburg Holm et al., 1999; Möller and Rajala, 2007) need to be moderated for emphasizing the customers actions. This supports the adoption of value in use perspective (Grönroos 2006) into the development of new models of value networks. Secondly, this research contributes to the emerging discussion of social media marketing (e.g. Kozinets et al., 2010; Mangold and Faulds, 2009; Hoffman and Fodor 2010; Palmer and Koenig-Lewis, 2009) and to the discussion about RFID technology's use in customer-facing processes (e.g. Lee et al., 2008; Ferrer et al., 2010; Bayraktar et al., 2010) suggesting that the integration of the new technologies to more complete solutions would boost the adoption of these technologies.

Managerial implications

The RFID technology enabled social media marketing system sets an example that both social media and RFID technology provide marketing opportunities which are still underestimated. On one side, the RFID based customer tracking offers possibilities to get accurate customer information and on the other the status updates in social networking sites offer huge potential for gaining brand awareness. However, this research reveals that the managers' challenges both in RFID technology and in social media marketing relate to the customers' worries about losing their privacy. Therefore, managers should focus on motivating the customers to use the social networking sites and emphasize the RFID technology's easiness to use. As it was found that people prefer the automated system because it helps them to gain respect from others, managers should try to find ways to boost people's self esteem via social networking. In practice, this means that companies should

support the customers to share information in social media as the value creation is based on interaction both between the marketer and the end customer as well as between the end customer and their social media connections. It seems that rewards do not work in social media environment as people's personality factors define whether one is willing to use social media or not. Therefore, the only ways that managers can increase the amount of their social media site users is to find ways on how the system can boost the customer's position in the social network.

Future studies and limitations for this study

This study can be considered as an opening for the conversation on how the RFID technology can be combined with social media marketing. The quite similar special characteristics related to interaction and privacy of social media and RFID technology affect the value creation through adopting these systems. This was the first study trying to depict the value creation through combined adoption of RFID technology and social media marketing and thus more studies are needed in this area. The future research should develop also other solutions that deploy RFID technology as its adoption is slowed by the lack of suitable applications.

One of the contributions of this study is that new theoretical models on value creation through social media need to be created to be able to depict the end customers' role in value creation. The existing models of value creating networks (e.g. by Blankenburg Holm et al., 1999) focus on the relationships and actions of the suppliers but lack the end customer's actions effects on the value creation. This suggests that new models of value creation must be developed. The value in use perspective (Grönroos, 2006) and value co-creation together with the customer (Vargo and Lusch, 2004) should be embedded in the new models of value networks which emphasize the end customer's role in value creation.

This study focused on a single case, in which a value network built for RFID enabled social media marketing system was analyzed. The system is in its pilot phase and it is lacking the longitudinal data about the use of the system. Therefore, the findings may not reveal all the value components which can arise after people have familiarized themselves with the system and found all the positive and negative aspects of it. Limitations for this study include also the small amount of respondents which may be a source of respondent bias.

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