Customer participation in retail – focus on automated services

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Key Words
Retail, Self-service, Self-service technologies, Automated services, Customer participation

Abstract
Self-service technologies in retail have not been studied on a large scale despite their increasing importance. The major aim of this article is to increase our understanding of automated processes in retail by employing an in-depth analysis of one case. The object of study is a fully automated food shop in Western Finland, in a small village. After a brief review of customer participation and self-service technologies in general, the object of study is analyzed by means of a survey. A total of 82 persons (= 27.3 % of the village population) took part in the survey. The findings indicate that the automated concept has great relevance for the customers. Customers were committed to the service concept and the general perception of quality is rather high. Lack of personal service is not generally perceived as an issue, but according to this study, age seems to have a weak impact on the customers’ perceived difficulty of use of the vending machines. Managerially it has become clear that traditional retail research does not provide sufficient information for automated stores. In terms of further research, a study on automated stores in urban surroundings and an in-depth analysis of the ways of communication between vending machines and customers are suggested.

Introduction
When you run out of milk or notice that the bag of flour is empty just when you have planned to bake a pie, you most likely take a walk or drive to the nearest grocery shop or supermarket to buy those items. That scenario is a reality if you live in a city. However, in most rural areas the scene is totally different as many shops are closing down because of the diminishing demand and shrinking customer base. It is simply not profitable to run a traditional store in those areas. The situation can be very problematic from the inhabitant’s point of view and there is the danger of a vicious circle: less demand leads to less supply, which in turn leads into less demand and so on. Concentrating the shops to the population centres makes shopping trips very long for some people, which is a major problem especially for elderly citizens. In spite of this clearly negative and common development, relatively little attention has been paid to the managerial problems in retailing in communities that are too small or do not have any prospects for growth in order to attract large firms (Broekemier and Cooper, 1997).
Retailers in small communities face many challenges. One seemingly common issue for most rural retailers is simply survivability (Broekemier and Cooper, 1997). In order to cope and prosper in rural areas, retailers have to adjust their operations to fit the local market conditions. Retailers are increasingly considering innovative options for delivering service to their customers (Weijters et al., 2007; Falk and Schillewaert, 2007). One example of these innovative options is the use of self-service technologies (SSTs), allowing customers to create a service outcome independently of direct service employee involvement (Weijters et al., 2007; Forbes, 2006).

In this article, customer participation is analyzed in the self-service-oriented retail context, in a fully automated retail shop located in Kullaa, Western Finland. According to Broekemier and Cooper (1997), the term ‘rural’ may be defined in several ways. Rural areas may be ‘extremely small, relatively isolated areas where population density is very low’. Alternatively, some authors consider rural retailers as ‘simply small businesses which are limited in size of markets they attempt to serve, both in geographic and population terms’. The automated retail shop that has been analyzed in this study is located in a village with a total population of around 300 people and, therefore, faces all the challenges that arise from the fact that the location is truly rural.

Typically, vending machines are placed in offices, factories or public spaces and they are usually seen as an alternative shopping channel. Typically, self-service technology applications are used as an additional service in self-service check-out lines or as applications making self-scanning possible. Despite the increasing presence and penetration of vending machines, there is a clear lack of studies that shed light on consumers’ experiences and consumption behaviour involving vending machines (Dong, 2003).

This article starts with a general discussion of customer participation in retail. Thereafter, SSTs in retail are discussed, and finally one self-service construct in retail is both analyzed and discussed. As the approach is rather practical, in addition to conclusions, some ideas for further studies and thoughts about managerial implications are presented. In sum, the overall aim of this article is to increase our knowledge and understanding of automated services in retail in rural areas by studying customer behaviour and overall response.

**Customer participation in retail**

Customers may participate in the retail service process in many ways. It is argued that customer participation in general could raise organizational productivity, improve service performance and efficiency. This productivity improvement could mean that customers act as a productive agent providing inputs to service production, which then assures that they receive the desired service (Lugosi, 2007). Customer participation can also be related to customer value through service quality (Dawson and Terashima, 2004). Chien-Heng (2009) concludes that customer participation is positively correlated with the strength of the customer relationship.
In the case of SSTs, the technology typically allows (or forces) the consumers to produce their own service encounters through a technological interaction rather than through a personal interaction (Lee and Allaway, 2002). However, even in the case of SSTs, some interaction among the customers may take place. This interaction is important; there is some evidence that for some customers product-related conversations with other customers replace or reinforce those with the sales assistants (Baron et al., 1996). One could assume that the same logic would apply for the SSTs as well. According to many authors, service company customers may be characterized as co-producers or partial employees of the company. The emerging “service-dominant” logic challenges the traditional view of buyers as passive consumers (Xie et al., 2008). In other words, customers do have an active role in the co-creation of value and that co-creation captures participation as an essential part of the service offering (Vargo and Lusch, 2008; Schneider and Bowen, 1995; Greenwood and Lachman, 1996; Ackroyd, 1996).

Customer participation, in general, may have a positive or negative effect on the service provider. Hsieh et al. (2004) point out that customer participation may constrain the potential efficiency of the service system, disrupt organisational routines and fail to comply with the company procedures. These elements are mainly related to human interaction, which is lacking in a vending shop environment. On the other hand, customer participation always includes an element of having an impact on the service process, which may include the possibility to formulate the process according to the individual customer’s needs. According to Cunningham et al. (2009), the ongoing radical progression from traditional interpersonal human-to-human contact to human-to-machine interaction may be regarded as a fundamental shift in the nature of services (see also Parasuraman, 1996). Customer participation also has a strong productivity dimension. Several researchers have pointed out that customer participation in the service production process is strongly connected with service productivity (Ojasalo, 2003).

Since past research in services has been focused on the characteristics and dynamics of interpersonal interactions between customers and service representatives in the delivery of services, many academic researchers have questioned the relevance of this kind of research when managing SSTs (Cunningham et al., 2009). Other customer participation issues in retailing literature that have been studied are oral participation (Baron et al., 1996), retail theatre (Harris et al., 2001; Baron et al., 2001), customer voluntary performance (Bettencourt, 1997) and customers as partial employees (Keh and Teo, 2001).

SSTs have to some extent been connected to the discussion of customer participation. Dean (2008) pinpoints the new role of a customer as a co-producer in service production when using the SSTs. That role of a customer in the production of a service must be defined just as the organization defines the role of any employee. Lee and Allaway (2002) state that the replacement of human service by a technology usually
requires both the development of new knowledge and behaviour associated with the service. Furthermore, there is the need for a new kind of customer participation and readiness to perform a partial responsibility of the process. Cunningham et al. (2009) state that the nature of SSTs demands significantly more consumer participation than traditional services.

Retail represents an area where there is a long tradition of customer participation. This characteristic is due to the commonplace nature of retail as well as to the high number of frequent customers. Both service providers and customers are very much ‘on stage’ – to the extent that sometimes the term retail theater is used to imply that the service offer is individual, special and different (Harris et al., 2001). Breaking away from the traditional way of operating and replacing sales assistants with machines is a rather challenging task – but it is one dictated by environmental factors.

**Self-service technologies in retail**

As Czepiel (1990) notes, service encounters are foremost social encounters. When customers mainly interact with technology, the social dimension is reduced or eliminated. The appeal of SSTs is primarily derived from the elimination, or at least a significant reduction, in the involvement of a service representative (Cunningham et al., 2009).

Self-service as a retail concept is growing and self-service technologies have been applied to many areas of business. Self-service technologies can be divided into internet and non-internet SSTs (Forbes, 2008). Examples of non-internet SSTs include ATMs, pump gas station terminals, automated hotel check out or fully automated phone systems (Curran and Meuter, 2005). Internet SSTs include a wide variety of internet-based services. In retail, a typical self-service technology application is a self-service check-out line. In general, self-service technologies are attracting a great deal of attention from academics and practitioners because of their relative newness and strategic importance. However, despite the accelerating pace at which technology-based service systems are permeating retailing, academic research on the impact of such systems on customer experiences is still at a nascent stage (Verhoef et al., 2009).

Customer behaviour brings uncertainty in service production. Due to the diversity and unpredictability of customer demands as well as the customer’s on-site participation, service companies experience a high degree of input uncertainty (Ojasalo, 2003). By introducing SSTs, retailers get the customers themselves to be productive resources involved in the service delivery processes, which in turn helps retailers to overcome two major problems resulting from human interaction in the traditional service encounter. Firstly, retailers can handle demand fluctuations more effectively, and secondly, a major part of the service process is standardized owing to the technological interface, which leads to a more consistent service atmosphere independent of an employee’s personality and mood (Weiters et al., 2007; Hsieh et al., 2004). One important aspect in SST research in retail is the customer’s willingness to
switch from using service personnel to using SSTs. This possible willingness is
dependent upon the customer’s ability to use SSTs, the risk involved with that use, the
advantages associated with that use and the extent to which contact with the service
personnel is preferred as of deemed necessary (see Cunningham et al., 2009). On the other
hand, researchers have found that some consumers may actually prefer using
technology-based self-service over traditional service because they find it easy to use, or
it helps them to avoid interaction with employees (Dabholkar and Bagozzi, 2002).
Customer resistance to technology can reduce the level of user satisfaction. Even
innovators and technologically savvy customers sometimes view technology with
suspicion or aversion (Makarem et al., 2009).

The reasons behind satisfying and dissatisfying SST encounters are multiple. A
satisfying SST encounter that solves an intensified need is usually perceived as better
than a traditional interpersonal service encounter. Dissatisfying incidents usually
include elements like technology failures, process failures, poor technology, bad service
design and customer-driven failures (Makarem et al., 2009; Meuter et. al., 2000).
Therefore, the reactions from the consumers tend to be mixed (Lee and Allaway, 2002;
Dabholkar and Bagozzi, 2002). Partly because of the dissatisfaction, it is suggested that
an increasingly relevant question related to offering development of technology-based
self-service would be the determination of the self-service technology user’s personality
characteristics (Dabholkar and Bagozzi, 2002).

An automated retail store located in a rural area is definitely an innovative and
new concept. When SST technologies have been analyzed in the retail context, the
analyses have typically been related to self-service scanning technologies. These
technologies and self-service kiosks are part of the traditional retail format. However,
there are very few studies focusing on vending machines, and marketing textbooks pay
only little attention to this area (Dong, 2003). According to Verhof et al. (2009), insights
from extent research suggest that it is beneficial to offer a mix of employee-based and
SST-based service options. The focus of the present study is on the retail concept that
relies solely on a self-service vending format.

Involvement research suggests several approaches retailers may use in order to
engage customers and also to make shopping fun (see Puccinelli et al., 2009). In other
words, ‘fun’ may be seen as an attribute which can raise involvement to the next level in
a retail setting. Weijters et al. (2007), discusses a more recent stream of research that has
introduced the hedonic aspect of using self-service and focuses particularly on the
enjoyment aspect of using technology. In general, there seems to be a research gap in
involvement and purchase decision research; for example, how do retailers benefit from
deeper consumer processing? Deeper consumer processing may be the result of a lack of
retail competitors and the customers’ willingness to have a retail outlet in the village.
Kinard and Capella (2006), point out that consumer involvement could be influenced by
physical characteristics related to the product as well as personal characteristics related
to the consumers and situational factors. The automated retail concept may be regarded as an involvement attribute relating to a physical characteristic.

Customer emotions have traditionally been an important area of interest in consumer research. According to Gelbrich (2009), emotions have been identified as the antecedent of customer satisfaction/dissatisfaction or as an influencer of customer behaviour responses. Therefore, one stream of research examines how emotions contribute to the explanation of different customer responses. Gelbrich focuses on emotional reactions in a retail context using a SST. The scope of the present study is, however, wider as emotions are perceived in a holistic manner in relation to the automated retail concept. In their STT-related study, Selnes and Hansen (2001) focus on the self-service setup and its impact on the development of social bonds between the customer and the company. They argue that one potential risk faced by firms introducing self-service systems is reduced customer loyalty through weakened social bonds. However, the impact of self-service on social bonding is moderated by the need for personal assistance. When the customer relationship is simple, due to the inherent simplicity of the customer’s product needs deriving from expertise and prior experience, self-service will be the preferred mode of contact. Selnes and Hansen (2001) state that in simple relationships - like in the present case where personal assistance needed by the customers is limited - the effect of self-service on social bonds is expected to be negative.

**Methodology**

This descriptive study focuses on different customer-related aspects of an innovative retail concept. Due to the descriptive character of this study and the lack of previous research on the particular retail concept, the traditional hypothesis testing procedure has not been employed.

The empirical data for this study has been collected from *Ruokakomero* (‘Pantry’), a retail outlet located in Kullaa in Western Finland. Kullaa is a small village with a population of around 300. Kullaa represents a typical rural village in Finland, and the total population of the county where it is located is around 1600. The closest town is Pori, 24 kilometres away, with 75,000 inhabitants. The population density in the area is very low with approximately six persons per square kilometre. *Ruokakomero* is a fully automated retail outlet, established in 2009. There are eight different vending machines and customers may choose among approximately 200 different grocery products. The outlet is open daily 6.00-22.00 and customers pay for their purchases either by credit card or cash.

A questionnaire was given to the customers when they entered the store. Customers filled out the questionnaire and gave it back to the research assistant or left it in a box located in the store. Customers who filled out the questionnaires became eligible for a lottery drawing of a food basket worth 50 euros as the prize. Altogether, 91 customers replied to the survey and 9 were incomplete, so the sample size was 82. With
regard to the total population of the village and the rural location, the sample size may be deemed sufficient for this study.

Consumer involvement is an important construct affecting consumers’ shopping experiences. The involvement measures were based on Zaichkowsky’s (1985) personal involvement inventory construct. The actual question format was derived from Dong’s (2003) vending related survey where Zaichkowsky’s original measurement format was somewhat shortened. The three dimensions used in order to capture customer involvement were: ‘useless – useful’, ‘unimportant – important’ and ‘means a lot to me – means nothing to me.’ A seven point semantic differential scale (1 to 7) was used to measure the participants’ responses to the dimensions. The overall satisfaction with the shopping trip was captured in terms of cumulative satisfaction on a scale ranging from 0 (very dissatisfied) to 10 (very satisfied).

The customer purchasing experiences in the vending store were analyzed by measuring the customers’ overall evaluation of the self-service technology, general technology readiness and user experiences of self-service technology. The questionnaire also included some questions about background information: age, gender and education level - as these may affect customer attitudes towards SSTs (Wejitories, 2007). The questionnaire is attached in Appendix 1.

Findings

Buying

In general, the automated vending store seemed to satisfy the purchasing needs of its customers. A total of 48% of the respondents mentioned that they buy less than 10% of their groceries from Ruokakomero and a vast majority (72.8%) say that the total share is less than 20% of their total amount of daily grocery purchases. We can state that the store under study represents a place for supplementary purchases. However, there were also customers who bought a considerably larger part of their daily groceries from the outlet. A 17% share of the customers mentioned that they buy over half of their groceries from the outlet. Especially younger customers seemed to concentrate more of their purchases to the automated retail store. Younger customers are not typically responsible for the daily shopping activities of a household and they may not have a car, which affects their shopping behaviour, especially in rural areas where distances to competitive retail outlets are longer.

Comparing automated and conventional retail concepts

According to Lee (2003), consumers are likely to be able to make an overall comparative evaluation between a traditional retail store visit and buying from vending machines. This argument seems to apply to the present study as well. The respondents were asked how they compare their shopping experience in general with a traditional retail store. The responses were measured on a five point scale of ‘much worse’ (1) to ‘much better’ (5). According to our analysis, the general experience of an automated retail store visit seems to be a better one than visiting a traditional retail outlet. As
shown in Table 1, 46.9% of the respondents consider the general experience ‘much’ or ‘somewhat’ better than visiting a traditional retail store and only 1.2% mention that the experience is much worse.

### How would you rate in general your purchasing experience in Ruokakomero compared to a traditional retail store?

<table>
<thead>
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<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
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<tr>
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<td></td>
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<tr>
<td>Much worse</td>
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<td>1,2</td>
<td>1,2</td>
<td>1,2</td>
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<tr>
<td>Somewhat worse</td>
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<td>11,0</td>
<td>11,1</td>
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<td>About the same</td>
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<td>40,7</td>
<td>53,1</td>
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<tr>
<td>Somewhat better</td>
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<td>84,0</td>
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<tr>
<td>Much better</td>
<td>13</td>
<td>15,9</td>
<td>16,0</td>
<td>100,0</td>
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<tr>
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<td>98,8</td>
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<tr>
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<td>1,2</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>82</strong></td>
<td><strong>100,0</strong></td>
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**Table 1.** Perception of shopping experience in automated vs. traditional retail shop

This result is interesting and somewhat contrary with previous studies. In Lee’s study (2009), 10.9% of the respondents rated their general feeling of the shopping experience much or somewhat better when using a vending machine than visiting a traditional retail outlet, compared to 46.9% in the present study. The Ruokakomero status as the only retail store in the rural village may have positively affected the shopping experience results of the present study. In this particular case we can state that the shopping experience can be excellent even without personal interaction.

### Personal service

The automated vending store concept naturally lacks one retail-related attribute - personal service. Personal service is usually considered to be one important variable in the retail context. According to Gunningham et al. (2009), one of the areas in which the researchers of SSTs express concern, is the extent to which contact with service personnel is preferred as a necessity. In the present study, personal service was not regarded as a very important retail variable. On a five point scale (1= not at all important, 5= very important) the importance of personal service was typically rated under three. Especially the age group 26-35 years does not regard personal service as an important aspect in the retail context, as shown in Figure 1.
Needs, involvement and emotional issues

The automated retail format seemed to be much needed and appreciated in the village. On a seven-point scale (7=very meaningful...1= not meaningful at all), the respondents rated the Ruokakomero 5.5 on average, and concerning the question of how much they need (7= very much needed,..., 1= not needed at all) such a shop, the response average was 6.1. We can argue that the personal relevance of the Ruokakomero retail outlet is high and customers seem to be highly involved with the concept.

Age

Customer age seemed to have an impact on the customers’ shopping habits. Customer age also seemed to affect their opinions about the use of vending machines in a retail outlet. Older customers perceive the use of vending machines as a little more difficult - the correlation between age and ease of use of vending machines -is 0.354 (p=0.002). The relationship is non-linear because customers over 45 years of age face an accelerated level of difficulty in use. Interestingly, age does not seem to correlate with the emotions towards vending machines.

Managerial implications, limitations and suggestions for future research

Despite the rather small sample size, it still represents almost one third of the total village population. Therefore, the findings related to the concept are valid, but further generalizations have to be made with caution. Based on the general findings of this study, we may conclude that automated vending shops have great relevance for customers and there is no foreseeable obstacle for growth in this area. Customers are committed to the automated retail format and the concept can easily be defined as high involvement. Some authors consider this view of involvement as rather unrealistic (Swoboda et al., 2008), but this study indicates the contrary. It has also become clear that some technological development work is needed in order to make the shops as customer-friendly and ‘human’ as possible. Customer acceptance of the self-service
setup is high and the potential risks faced by the firms introducing self-service systems were not emphasized in the present study. The social bonds to a retail outlet with no personal contact seemed to be on high level.

The fact that the empirical data has been collected from a village within a rural area is essential in this study. The rural location is an influencing factor; in urban surroundings the findings would have probably been somewhat different. However, that discussion is beyond the scope of this study, but it certainly would be interesting to investigate fully or partly automated retail shops in urban surroundings. Another potential area of future research could be an in-depth analysis of the possibilities of ‘communication’ between vending machines and customers. Maybe there are possibilities for incorporating the ‘fun factor’ and use as an emotional aspect in an automated retail store. Furthermore, the communication among customers is interesting as other customers may partly take over some of the traditional salesperson roles.

To conclude, more research about automated services is definitely needed. Most findings in the area of retail cannot directly be applied to automated stores (see for instance Malhotra, 1983). Therefore, there is a clear need for a systematic conceptual analysis of all the different attributes having an impact on customers in an automated store. Traditional models are simply not sufficient any longer in this new and rapidly growing area in retail.

References


