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Understanding Customer Attitudes towards TECHNOLOGY-BASED SELF-SERVICE

A case study on ATMs

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In the present society technological innovations are playing significant role in every phase of human life, human interaction with machines has become essential in service sector. In the past a number of efforts have been made in the literature of service marketing to understand how companies can better deliver their services with the help of self-service technology. In this present situation companies have many possibilities to realize service offerings with huge investments in self-service technologies, as the technology became the driving force to service the customers effectively and helpful in delivering the services.

Nowadays it become challenging for the companies to serve customers effectively within a prescribed time providing the right products with lower cost. To get rid of this issue most of the organizations are showing interest to employ self-service technologies (Like ATMs, ticket vending machines, online auctions, etc...). The purpose of the thesis can be traced to the fact that a large part of the service sector is changing from personnel-based delivery to technology-based self-service. The theoretical problem of the present study is to concentrate on service marketing and service quality in order to provide a better understanding of customers’ attitudes and preferences towards technology-based self-services (ATMs).

So far many researchers have addressed customers’ attitudes towards the technology-based self-service delivery from a service quality perspective. The present paper on service quality and self-service based on technology concerns of expected use rather than actual use and customers expectations about new self-service technologies. To reach the purpose we conducted a pilot case study to know the customers attitudes towards technology (speed, accuracy, ease of use, privacy) using ATMs and their perception towards self-service technologies. For data collection we did 26 open interviews and 150 interviews with the help of questionnaire and the data analysis is based on both qualitative and quantitative methods, supported by the qualitative information and literature reviews. Finally in terms of important findings: easy of use, speed, control and accuracy are the main attributes for service quality and customer satisfaction.
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Chapter 1
INTRODUCTION AND RESEARCH PROBLEM

In this chapter we will start our discussion with the introduction and background of the research area. The background begins with explaining the services and then we will discuss about the purpose of our thesis followed by research questions. Finally it concludes with outline of this thesis and explaining about ATMs.

1.1 Introduction
As it became very vital for companies to serve the customer effectively and make them more satisfied with their offerings, technology increasingly playing a major role for companies in delivering the services to the customers with in less time and at a lower cost. Technology-based self-services \(^1\) (like ATMs, ticket vending machines, parking machines) will be crucial for the companies and even to the customer to have the services very easily and efficiently. But in other hand before companies get advantages from these self-service technologies they have to pay attention about the customer perception. Are the customers willing to adopt self-service technology rather than personal services?

Area that need to be considered in Technology-Based Self-Service

*Figure 1 Service-delivery system and the research interest of the present study.*

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\(^1\) Technology-based self-services (TBSS)
Dabholkar (1996) found evidence that customers’ general attitudes towards using technology and customers need for interacting with a service employee had a significant impact on expected service quality and the intention to try new technology-based self-service options.

Generally important qualities of personnel-based service delivery are responsiveness, empathy, assurance, reliability and tangibles (Parasuraman et al, 1988). For a long time, academic service-quality research has investigated the characteristics and dynamics of the personnel-based part in service delivery. Scholars haven’t focused much more on technology-based self-service from the perspective of perceived service quality nearly as much (Dabholkar, 1996). Therefore, we need to develop our understanding in shaded areas (Figure1). We need to know more about the interaction between customer and technology to perceive service quality.

If we take Dabholkar’s 1996 study into consideration, empirical research has so far been limited to examining customers’ expectations and intentions to use a Technology-Based Self-Service option that they have never tried; no one has looked at customer evaluations based on actual experience over time, which is the traditional way to investigate service quality.

This study tries to contribute to provide better understanding about the technology based self-service especially ATMs with a customer perspective, based on previous literature reviews and theories. We describe mainly technology, advances in technology, interaction with technology, Self-Service Technologies, classification scheme of Technology-Based Self-Service delivery, perceived service quality, customer involvement and factors explaining the customers’ attitude towards Technology-Based Self-Service to enhance service quality.
1.2 Background

Service is somewhat problematic to define and even today there is no clear or common definition of service to fall back on in every case. The word service includes industrial service sector and public service sector offers, both of them are intangible in offerings.

*A service is an activity or series of activities of more or less intangible nature that normally, but not necessarily, take place in interactions between the customer and service employee and/or physical resources or goods and/or systems of the service provider, which are provided as solutions to customer problems (Grönroos, 1990:27)*

Services constitute an important part of the economy of the industrialised countries, in both production and consumption. The national accounts commonly refer to the private service sector as trade/retailing, consumer services, transportation & communication, consultant services, banks & insurance, hotels & restaurants, and real estate. Referring to this development, researchers from various area of business administration have stressed the need for more research in this part of the business economy.

*A service is an activity or a series of activities that take place in interactions with a contact person or a physical machine which provides customer satisfaction (Grönroos, 1990:26).*

According to Toffler (1982; 1990) industrialisation refers to ever-growing service sector. Toffler says that logic of industrialisation as seen different sectors of the economy converted from human workforce to machines as inputs of productions. In the continuously growing service sector, customers’ involvement in production process even in the industrial service sector and to delivery for him/her-self, so called self service. The implementation of machines and self-service go hand in hand, so we see parts of the main characteristics in services changing from personnel based person-to-person service to technology-based self-service.
This will lead to total customer satisfaction with high quality in delivering the services to customers will make them loyal for the company, in other words as it stated by “The best companies of the future will be those who find ways of developing services to create and keep customers and thereby sustain a competitive advantage.” (Vandermerwe and Rada 1988: p. 314)

1.3 Purpose
The purpose is to understand and develop a conceptual framework of customer’s attitudes and preferences towards Technology-based self-service. Customer perception towards actual use of Technology-based self-service delivery from a service-quality perspective will be helpful for the organizations to serve the customer more effectively.

1.4 Research Questions
1) To identify customers’ attitudes towards Technology Based Self-Service (ATMs).

2) Does Technology-Based Self-Service attributes and customer characteristics have an effect on service quality evaluations?

3) Are the customers satisfied with the Technology-Based Self-Service (ATMs)?

1.5 Outline of the thesis
To provide better overview to the reader, a brief presentation of the coming chapters will be given below.

- In this first chapter we discuss introduction and a background to this research has been provided followed with the purpose of this thesis and research problem have also been defined.

- Chapter two is about the theoretical review mainly based on technology based self-service theories to describe what factors relate to customer participation and customer satisfaction and discusses the concept of service quality.
• Chapter three specifies the methodology that includes research strategy and method of data collection.

• Chapter four is about the data and analysis.

• Chapter five provides the conclusions in comparison with the previous researchers and implications. It has shown that customer participation can be motivated by speed, accuracy, control, enjoyment or individual commitment to the service organization.

1.6 ATMs

Today, self-service technology is challenging the notion that provider-client interaction is an essential feature of services marketing.

Nowadays automated teller machine services (ATMs) are widely used by the customers rather than personal based banking services. In the starting period ATMs were used to only for cash withdraw proposal without concern of bank timings, but present the scenario changes rapidly, more banking operations like withdrawing, transferring and checking account balance can be carried out with ATMs.

Customers’ are saving time and money with the use of ATMs. Even most of the financial organizations are using the ATMs to serve customers more effectively and in a timely manner in a way to cut down their production cost, which will be benefit for the organizations and customers.

ATMs first came in 1968. Don Wetzel was the co-patentee and chief conceptualist of the automated teller machine, an idea he thought of while waiting in line at a Dallas bank. At the time Wetzel was the Vice President of Product Planning at Docutel, the company that developed automated baggage-handling equipment. The other two inventors listed on the patent were Tom Barnes, the chief mechanical engineer and George Chastain, the electrical engineer. It took five million dollars to develop the ATM. The concept of the
ATM first began in 1968, a working prototype came about in 1969 and Docutel was issued a patent in 1973. The first working ATM was installed in a New York based Chemical Bank\textsuperscript{2}.

The first kind of ATMs were off-line machines, money withdrawn from an account could not be performed automatically because of the accounts are not connected by computer network to the machine’s. There was no single bank account was connected by a computer network to the ATM.

Wetzel, Barnes and Chastain developed the first real ATM cards, cards with a magnetic strip and a personal ID number to get cash. ATM cards had to be different from credit cards (then without magnetic strips) so account information could be included.

The valuable tool in today’s banking industry is ATM, for financial institutions keeping an off-premise ATM network up and running is increasingly expensive and time consuming. Automatic Teller Machines are going to get a facelift. In future, customers will be able to use ATMs to cash checks, deposit checks without an envelope, and can print monthly bank statements also. We can think that are only the beginning. Manufacturers say that ATM machines can also print coupons, traveler’s checks, phone cards and even plane and theater tickets etc\textsuperscript{3}.

To reduce the waiting times some banks are going to plan to deploy multifunctional ATMs or interactive kiosks next to the plain ATMs. Also, more facilities or functions lead to longer lines for customer, which gives problem of convenience doing business with an ATM. Further more, using ATMs as marketing outlets haven’t worked.

The users’ expectation, enjoyment and control strongly influence service quality, will strongly insists to research on new technology-based self-service options. Similarly, service design of technology ensures that customers are not overpowered. Additionally, using technology-based self-service option can show the user in control.

\textsuperscript{2} iceman.strana.de/atmwp.doc
\textsuperscript{3} http://ritim.cba.uri.edu/bit/bits15.htm
Chapter 2
THEORETICAL REVIEW

In this chapter we will review our research questions on the basis of previous researches and available literature which includes about the customers attitudes in general and also about the Technology-Based Self-Service Characteristics. We will discuss the theories in respect to the research questions which we have presented in chapter one.

2.1 Personnel-based service delivery
Realizing that service-quality research is dominated by personnel-based service delivery one might question whether or not automated self-service can deliver excellent service quality. “And so long as this presumption reigns, service will forever be limited in efficiency, reliability and quality” (Dabholkar, 1996).

Nowadays it became very difficult for the organizations, especially for the front line employees to provide quality in delivering the services by taken in to consideration about the productive and efficient at a time. As a matter of fact, the front line employee who will serve as bridge between the customer and organization to produce revenue to the firm and also building relationship with the customers. Today it’s a big question for many organizations, and even for the employees to serve the customer with quality in a timely manner to make them satisfied with their offerings.

2.2 Technology
During recent years technology has become one of the key aspects for the organizations to deliver their services. As the companies started giving importance to new technologies, lead for the development of self-service technologies. In self service technology the word technology is crucial; because self services are related with technological aspects where companies have to strive on to improve their technological features that will increase the quality level in delivering the services.
"The ability to customize is one of the key benefits of implementing technology into the delivery of services." (Quinn 1996 as referenced in Bitner, Brown and Meuter 2000, p. 142)

The term “technology” need not refer to machines or equipment. The term technology can be separated into 1) Hard, 2) Hybrid and 3) Soft technologies (Levitt 1976)

- Hard technology is physical technology that replaces both manual labour and brainpower is usually termed as automation.
- Hybrid technology is machines or equipment that manages, limit and organize work or service processes in such a way that they can be performed faster and more efficiently.
- Soft technology in terms of techniques or organized ways of working that replaces more ad hoc methods.

Normann (2000) offers five reasons for the service company to offer technology-based service delivery:

1. To reduce costs
2. To control quality
3. To increase quality level
4. More direct customer connections
5. Technology as moderator of behaviour

2.3 Advances in technology

Advances in technology have increased service delivery in recent years, with a tremendous impact both on self-service options and on service support. Today, customers can choose between varieties of technological options to perform services for themselves (Zinn 1993). At the same time, companies employ technology at various stages in the service delivery process and in services support operations to improve the quality and productivity of their service offering (Blumberg 1994).

Advances in the technology had given new dimensions, internet permitted to access wide range of self-service technologies (like ATMs, Internet banking, E-shopping, Online auctions, etc...). As these technological aspects are spreading over, moreover companies
are also interested to employ these technological dimensions because of potential cost savings and delivering the products in an effective way will make big difference in increasing sales growth, as well as to win the competition and also to make the customer satisfied with the offerings.

2.4 Interaction with technology
This chapter highlights research in the human factor in computer interaction and what it can tell us about users’ evaluations of computer environments similar to Technology-Based Self-Service systems. According to Blumberg (1994) companies, employ technology at various stages in the service delivery process and in service support operations to improve the quality and productivity of their service offerings.

In the present society human interaction with the technology is getting more importance, as a result most of the customers are willing to use technology based service offers. Customer interaction with technology growing day by day enabled the importance of self-service technology for companies to deliver service rather than personal based service. These technological features will be the critical factor of interaction between the customer and organization, and technology is going to play important role for the companies in their long run business.

Research in service delivery systems as such as is a suitable starting point for describing technology-based self-service option, but as this research area is purely management-oriented, it allows for only a very limited contribution to the understanding of the evaluation process and the attitude of the customer towards using the self-service option.

Toffler (1982) is only one of several social scientists who write that the long-term development of a large part of the service sector inevitably moves towards an economy of “presumption” or self-service, meaning that customers perform more and more services for themselves. One trend is towards standardization and self-service-based companies and the other towards customization and knowledge-based companies.
Ever since the early service literature, some service researchers have thought industrialization process too slow, arguing for faster industrialization of the service sector and better utilization of technology. Quinn and Paquette (1990), Dabholkar (1994), Prendergast and Marr (1994), Lovelock (1995) and Meuter and Bitner (1998) suggest that technology has especially impacted on service firms, as the number of technological applications offered by service providers is substantial and growing.

In order to suggest “principles” for when and how to offer depersonalized and technology-based self-service delivery, so that service companies may benefit from the internal advantages and at the same time improve marketing performance, we first need a sound and rich understanding of what customers want, and how customers evaluate these forms of service delivery.

2.5 Adoption of technology

There is a logical relationship between consumer behaviour and service quality. Research looking at customer adoption of self service technologies found that “customer readiness” was a major factor in determining whether customers would even try a self-service option. Customer readiness results a combination of personal motivation, ability, and role clarity. Previous research on the adoption of computer technology has shown that perceived case of use and fun influence usage interactions (Davis, Bagozzi, and Warshaw 1989, 1992). Research shows that customers who view technology-based service as easy to use, reliable, and enjoyable also perceive higher service quality in such delivery options (Dabholkar 1991b, 1996). Rogers (1995) suggests five main and general characteristics that affect rate of adoption and diffusion (Relative advantage, compatibility, complexity, trialability and observability).

Adoption/diffusion research into Technology-Based Self-Service has however treated the role of customer characteristics. Research results show that younger, better educated, socially active people are likely to adopt technological innovations such as technology-based service and self-service options. Hence, with the expectation of generalized attitudes, the relationship between customer characteristics and customer-perceived
service quality of Technology-Based Self-Service has not yet been empirically investigated. From the perspective of service firms, it would be valuable to know what segments are to target or not to target with Technology-Based Self-Service.

### 2.6 Classification scheme of Technology-Based Self-Service delivery

Dabholkar proposes (1994) in classification scheme of Technology-Based Self-Service delivery Figure 2 comparing the upper and lower rows of the classification scheme of technology-based self-service delivery systems demand different levels of interaction from customers.

<table>
<thead>
<tr>
<th>Direct contact</th>
<th>At service site</th>
<th>At customers’ place</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CELL 1</strong></td>
<td>Customer goes to service site and uses technology to perform service. <em>E.g.</em> ATMs, automated ticket machines, self-scanning at retail and library checkouts, automated recipe guide in retail store, self-gas pumps, blood pressure machines, tourist info.</td>
<td><strong>CELL 2</strong> Customer uses technology from home/work to perform service. <em>E.g.</em> Internet shopping, interactive TV-shopping, reservations and information seeking over the internet, account information, financial transactions, distance learning.</td>
</tr>
<tr>
<td><strong>CELL 3</strong></td>
<td>Customer goes to service site and uses automated telephone system to perform service. <em>E.g.</em> automated wake-up calls at hotel room, telephone banking at bank, account information at libraries and retail store.</td>
<td><strong>CELL 4</strong> Customer calls automated telephone service from home/work to perform service. <em>E.g.</em> telephone-banking, automated telephone-banking, automated ticket ordering over telephone (airports, ferries, cinemas), automated time schedule (e.g. buses, trains).</td>
</tr>
<tr>
<td>Indirect contact</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Figure 2 Classification scheme of technology-based self-service delivery, adapted from Dabholkar (1994), focusing on cell relating to Technology-Based Self-Service.*
At one extreme we have a delivery system which includes customer physical and perceptive interaction in a way where customer need to have experience with these kind of services to be efficient at the task. Other extreme would be a Technology-Based Self-Service where the customer only interacts through automated voice prompts over telephone with out need for prior instructions. Coming to the lower cells, customers only contact the service company through interaction with their own hard technology (like regular telephone). In Cell2 customers also use their own hard technology (like a computer); with this they can only interact directly with the software technology of the service provider.

If the technology-based self-service system is based at the service provider’s, the atmosphere and the physical surroundings might be relevant to the customer’s evaluation of the system (e.g. Bitner, 1992; Dabholkar, 1994). This means that, as we are interested in exploring customers’ evaluations of Technology-Based Self-Service, we have little to gain from studying self-service gas pumps, traditional subway ticket machines or ATMS. Recent technologies, which manufacturers presently market and which exist side by side with personnel-based options in the industry, would seem to be more promising.

2.7 Self-Service Technology

Self-service is a service produced entirely by the customer without any direct involvement or interaction with firm’s employees. In Figure 3, we illustrate conceptualization of present day SST options; it is based on a review of the academic literature, trade press, observations related to our study.

The columns of the matrix represent the types of technologies companies are using to interface with customers in self-service. The rows of matrix represent the purpose of technologies from the customer’s perspective- what the customer can accomplish by using the technology.
This study represents in a way by exploring customer experiences with use of across broad range of Self-Service Technologies available in the marketplace. It is well established that customer satisfaction can affect customer retention and profitability (Anderson and Fornell 1994; Mano and Oliver 1993; Oliver 1993, 1997; Price, Arnould, and Tierney 1995; Reichheld and Sasser 1990).

Many of the technology-based self service options are fairly new and majority of customers may not be familiar with them. In such cases, people tend to make judgment about the new situations based on related past experiences and attitudes. Most people today are likely to have been exposed to some technological products and to have formed an attitude toward using such products, ranging anywhere from very favorable to very unfavorable. Because services are intangible, customers are searching for evidence of service in every interaction they have with an organization.

* Contact employees  
* Customer him/herself  
* Other customers

* Technology versus human  
* Operational flow of activities  
* Steps in Process  
* Flexibility versus standard

* Tangible communication  
* Service scape  
* Technology  
* website

\[\text{Figure 4 New marketing mix elements for Evidence of services}\]
In figure 4 note the parallels between the elements comprising evidence of service and the new marketing mix elements presented. The new mix of elements essentially is the evidence of service in each moment of truth.

These categories together represent the service and provide the evidence that tangibles offering. All of those evidence elements, or a subset of them, are present in every service encounter a customer has with a service firm and are critically important in managing service encounter quality and creating customer satisfaction. The three types of evidence may be differentially important depending on the type of service encounter (remote, phone, face-to-face).

Thus, understanding the underlying factors that trigger dis/satisfaction in Self-Service Technologies where the customer experienced/encounter with these types of services has become important managerial implications for customer-firm relationships. With Self-Service Technologies, customers create the service for themselves, so it is possible that they will accept the responsibility for the outcome (Mills, Chase, and Margulies 1983; Zeithaml 1981). If customers accept partial responsibility in dissatisfying situations, they may be likely to use the SST in the future. Again, this could have important managerial implications as companies develop new Self-Service Technologies and struggle with service encounter failures.

When customer complains (dissatisfaction), the firm has the opportunity to rectify the situation and potentially create a satisfied customer (Tax, Brown, and Chandrashekaran 1998). Complaints also provide information that can be used to fix service failure points.

Customers are viewed as ‘partial employees’ whose participation or performance in service delivery can be used by the service firm to improve the quality of its operations (Schneider and Bowen, 1995; Mills and Morris, 1986; Kelley et al., 1990). Given that technology-based options are relatively new forms of service delivery, service firms need strategic direction regarding whether or not to offer such options and how to design and promote them. As of now, they have little knowledge about decision-making models that
consumers would use to evaluate and select technology-based self-service options. The only types of evaluations customers would have, about service delivery that they have not yet tried, would be expectations.

Dabholkar (1996) is among the first one to introduce the term Technology Based Self-Service and further used by Dabholkar (1996), Ladik (1999) and Anselmsson (2001). Dabholkar (1996) found customer characteristics, in terms of general attitude (customer’s attitudes towards using technology and customers’ need for interaction with service employee) affect customer’s service quality expectations and willingness to try out and adopt technology-based self-service. But before the organization gets benefits from the Technology-Based Self-Service, they have to find out the customer willingness about these kinds of services.

Kelly et al (1990) say the service firm must develop mechanisms for managing its customers to ensure efficiency, as well as quality, as perceived by customers using or observing the process. Dabholkar’s (1996) empirical study of expected service quality and the intentions to adopt (or not adopt) new technology-based self-service options, was the first attempt to develop a systematic understanding of how customers evaluate technology-based self-service.

One approach is to move the customer into a production mode rather than a passive, receiving mode. Redesigning the service process in this way increases benefits for the customer in terms of personal control, accessibility, and timing. Prime examples of self-service occur when companies offer their services via Internet, as in the case of internet banking, ATM’s etc.

An early, well-known application of a technology-based self-service option was that of the automated teller machine (ATM) in the early 1980s. Today, self-service technology is challenging the notion that provider-client interaction is an essential feature of services marketing.
Langeard et al (1981), Bateson (1985) and Zeithaml and Gilly (1987) results show that younger, educated, socially active people are likely to adopt technological innovations such as technology-based service and self-service options.

2.8 Customer characteristics as determinants of service quality
Parasuraman et al (1988) found that the characteristics of the personnel, such as accuracy, willingness to serve etc., impacted on service quality. Thus, the characteristics of the customers, such as self-motivation and experience, should also matter, if they are to produce and deliver the service by themselves.

Generally customer characteristics can be based on e.g. age, education and their level of social integration, self motivation, technological experience, attitude towards using the technological products to use Technology-Based Self-Service as an option rather than personal based service offerings. We want technologies, which are used across a number of potentially discriminating customer characteristics. This would give us a good opportunity to study the impact of customer characteristics on the service-quality evaluation. Although it is theoretically and managerially interesting to make the distinction, it is difficult to separate and measure the relative impact of inputs and evaluations on perceived quality in an empirical analysis.

Adoption/diffusion research into Technology-Based Self-Service has however treated the role of customer characteristics. People who are younger, better educated, socially active people are likely to adopt technological innovations such as technology-based service and self-service options. Hence, with the expectation of generalized attitudes, the relationship between customer characteristics and customer-perceived service quality of Technology-Based Self-Service has not yet been empirically investigated. From the perspective of service firms, it would be valuable to know what segments are to target or not to target with Technology-Based Self-Service.

The customer characteristics and their determinants will be presented and discussed in five categories based on Dabholkar (1996), Rogers (1995), and Parasuraman et al (1994)
1. Demographics (age, education, social integration)
2. Personality (impatience, social risk, self-esteem)
3. Behaviour (self-motivation, consumption rate, technological experience)
4. Relationship (organisational commitment)
5. General attitudes (need for independence, need for social interaction and attitude towards using technology)

Customer characteristics

Expected service quality

Intention to use TBSS option

*Figure 5 Customer characteristics/ intention to Use Model / Overall Effect model*

### 2.9 Attributes of Technology-Based Self-Service as determinants of service quality

Previous research on technology based self service (Meuter et al 2000; Dabholkar 1996) has initiate that perceived attributes of technology play a critical role to determine whether the customers are willing to use like this options or not. According to Dabholkar (1996), from customer point of view speed, enjoyment, control, and ease of use are all important attributes in measuring and using the Technology-Based Self-Service.

**Speed of delivery**

Dabholkar (1996) initially suggested that expected speed of delivery is an important factor for choosing and evaluating technology-based self-service options. Foley et al (1990) suggest that the time it takes to accomplish a certain task is one of the most important factors when users evaluate the quality of computer technology. Several empirical studies have proven speed of delivery and waiting time to be important factors in customers’ evaluation of both self-service and personnel-based service.
**Enjoyment**

Normann (1983) suggests that customers in the self-service store accept greater physical effort and less personal interactions. Foley et al (1990) found pleasure to be a very important factor in determining how users evaluated quality of computer technology. Dabholkar (1996) found enjoyment to be the most important determinant of expected service quality and suggested that enjoyment may depend on the novelty of the technology. In this study, we are interested in long-term evaluation of and attitude towards a Technology-Based Self-Service option that has existed for several years, hence logically enjoyment may not be as important as when the option was new.

**Control**

Control means the amount of control that customer feels he/she has over the process outcome. According to Langeard et al (1981) control is most important factor for customer’s in using self-service technologies. Control is a rather a complex term and can be conceptualized as behavioral, cognitive or decisional (Bateson, 1985).

Behavioral control means the ability to influence the process. Cognitive control means understanding and anticipating the process. Decisional control concerns the ability to set or change the objective or outcome in a particular situation. A person’s belief that he/she has control, even in the absence of real control, will result in benefits similar to those associated with real control (Glass and singer, 1972; Langer, 1975)

**Reliability**

Reliability refers about the outcome in use of new technological self-service options, whether it’s reliable and perfect, or is there any risk involved in this process. Ram.S (1989:24) suggests four types of risks that make customer more resistant to innovations in general:

1. Functional risk: the fear of performance uncertainty
2. Economic risk: the fear of economic loss
3. Social risk: the fear of social obstruction
4. Psychological risk: the fear of psychological discomfort.
In this study, social and psychological risks were treated as matters of personality rather than characteristics of the technology. Parasuraman et al (1985) found that the safer bank customers feel when conducting their business at an automatic teller, the more likely they are to use the ATM. Reliability has a positive affect on service quality.

Ease of use
Ease of use found to be important factor in adoption and evaluation of self-service option (Dabholkar, 1996; Bateson 1985, Lockett & Littler, 1997). Kelley et al (1990) suggests that ease of use is an important attribute for customers, if they are to contribute with their own efforts. Foley et al (1990) deal with ergonomic qualities in a computer environment and distinguish between three kinds of efforts: cognitive, perceptive and motor. Dabholkar (1996) suggests several aspects of ease of use with in a impact on service-quality evaluations of self-service that could be related to physical effort.

Communication/Education
Just as Parasuraman et al (1985) stress the importance of knowledgeable personnel to high service quality, time set aside for training and knowledge of the customer leads to better service delivery and better perceived service quality. Perceived level of information and communication during the introductory phase has a positive effect on quality.

Personnel-based support
Chase (1978) suggested that, when rationalizing and replacing personnel with equipment and customer participation, the importance of the remaining personnel increases. He suggests that the customer who chooses the human teller instead of the ATM expects high social content of service delivery. This suggests that, although we may speak of a Technology-Based Self-Service system, the support of staff when needed may be significant in the evaluation of service quality. Personnel-based support may conceptually be separated in to two aspects; courtesy and responsiveness.
**Physical appearance**

Berry and Parusuraman (1991) presented a model capturing physical aspects of service delivery systems called “components of the physical environment”, which is based on two types of equipment related factors: ambient and design. The so-called ambient factors can only be neutral or negative. Design factors are qualities such as physical appearance and modernity of the equipment. Physical appearance has an effect on service quality.

Some researches begun to explore personality and demographic factors related to the acceptance of technology-based service.

- Dabholkar (1991a, 1992) personality factor, “need for interaction” with a service provider, had a significant negative effect.
- Forman and Sriram (1991) some customers resist technology-based self-service, they feel lonely and crave social interaction.
- Prendergast and Marr (1994) banking customers resist technology because they prefer human interaction.
- Evans and Brown (1988) suggest that safety and convenience are important factors.

Past research (Dabholkar 1996) has also examined whether technology-based self-service options increase or decrease perceived control for customers, and whether perceived control translates into perceived quality. Some people feel more in control when they perform the service for themselves, whereas others feel more in control having someone else wait on them (Bateson 1985; Dabholkar 1990; Langeard et al. 1981; Lovelock and Young 1979), a sense of “behavioral” control. Some technology-based self-service offers the customers not only control but also privacy.

Consumer familiarity with technology has a direct bearing on strategies for service design and introduction. Also, with increasing familiarity, consumers are likely to use less complex decision making and choice models for technology-based self-service options (Dabholkar 1994a).
Further, technology-based self-service options represent a unique form of service delivery, and the dimensions of service quality suggested in traditional models may not apply. Interviews with potential customers of Technology-Based Self-Service options and an examination of past studies on service delivery, self-service, and the use of technological products must suggest the appropriate dimensions of service quality. Figure 6 illustrates Self-Service Technology attitudes and the intention of customer to use Technology-Based Self-Service and make the readers understandable about technological attributes.

Customers today are highly sensitive to the speed of service delivery, and studies have shown that they usually over-estimate the time taken to deliver a service. Thus, if customers expect that a service will be delivered speedily, they are likely to evaluate the service more highly.
These two characteristics – effort and complexity – appear to be related and encompassed in ‘ease of use,’ found to be an important attribute to customers in using computer technology. Customers may be concerned about ease of use for several reasons. One reason may be related to saving actual effort expended.

Another reason may be to reduce the fear of social obstruction. If customers expect the technology to be difficult to use, they may become concerned about social risk and will view this as a low quality option. If they expect the technology to be easy to use, they will view the service delivery based on this technology as a high quality option.

2.10 Customer Involvement

We have successful self-service technologies in the market place today, these are successful because they offer clear benefits to customers, the benefits are well understood and appreciated compared to the alternative delivery modes, and the technology is user-friendly and reliable, and customers understand their roles and have the capability to use the technology.

Traditionally, customer participation in service production has been viewed as non productive and inefficient (Chase 1978; Mills and Morris 1986). Hackett (1992) cautions service firms that technology-based service delivery implies the absence of human intervention in case of service failure, a lack of personal relationships, an overemphasis on cost savings, and reduced opportunities for cross-selling other services.

Several researchers and practitioners feel strongly that technology has a positive impact on service delivery. Blumberg (1994) writes that service firms can increase productivity with technological breakthroughs and reduce costs using alternate delivery systems such as self-service. For high-contact services, firms need the tools and processes to efficiently collect information on customer expectations and suggestions, and they need to incorporate these into the system to “construct detailed customer profiles, eliminate service-specification errors, speed service, and improve service consistency” (Berkeley and Gupta 1995).
Quinn (1996) information technology used in service support is boosting firm productivity and providing greater convenience, safety, accuracy, reliability, flexibility for the consumer. Past research (Dabholkar 1994) has examined a variety of options for technology-based service design, whether backstage or front stage, on-site or off-site, and has raised research issues closely related to managerial strategy and implementation.

It’s becoming essential for the organizations to make the customer involved in the all parts of the business, and it’s even very necessary in most of the organizations where we can’t differentiate service production with delivery process. Marketing will improve in the relations with customers. They have to make involve the customer in each aspect of business, after getting confirmed with the customer participation is at right pace then they can start to prescribe more about the role of the customer.

Dabholkar (1990) proposes that, given that many customers choose these automated and self-service-based options even when the price level is the same, it is likely that these segments perceive higher levels of service quality from using these options. In an investigation of students and self-ordering option at hamburger restaurants, Dabholkar (1996) found a significant relationship between expected service quality and intention to use a new technology-based self-service.

2.11 Customers’ Attitude
As the service company invests money in technology and in informing, convincing, educating and training the customer, it is important that customers keep using the service option. As satisfaction is said to have more antecedents than service quality, we ought to gain better insight into customer preferences and the relevance of service quality by comparing the relationship between satisfaction and preferences with the relationship between service quality and preferences for Technology-Based Self-Service. Some factors impacting on customer’s preferences to participate in technology-based service systems may be easily explained in terms of satisfaction. Satisfaction is recognized as having more antecedents, being a wider attitude and a better predictor of behavior, and
given that we know very little about how influential service quality is in evaluating and forming preferences for Technology-Based Self-Service options.

Drawing on human-factor research, their basic viewpoint is that interaction with a computer involves three basic human processes (Foley et al 1990).

- Perceptual (involving perceptions)
- Cognitive (reducible empirical knowledge)
- Motor

Based on the three processes and using an ergonomic approach, Foley et al (1990) have put forward seven measures of criteria of ergonomic quality in order to understand the satisfaction of the user.

1. Speed
2. Accuracy
3. Pleasure
4. Convenience
5. Learning and recall time
6. Memory load
7. Error and fatigue susceptibility

**2.12 Perceived Service Quality**

Grönroos (1982) was among the first to introduce the term “perceived service quality” as well as the initial conceptual framework of service quality. Grönroos (1982) based his initial framework on ideas borrowed from consumer-behavior research and after-purchase evaluations.

Dabholkar et al (1996) found five basic service-quality dimensions in retailing:

- Physical aspects (convenience, appearance)
- Reliability (promises, doing it right)
- Personal interaction (inspiring confidence, courtesy)
- Problem solving (handling complaints, accepting merchandise in return)
- Policy (credit, opening hours etc.).

If we want to generate knowledge about perceived service quality using Technology-Based Self-Service, we should study successful and diffused cases, like ATM and self-service gas pump or perhaps unsuccessful cases to know more about the advantages or disadvantages involved in that. In this way, we like to identify technology-based and customer-based characteristics that result in good or poor perceived service quality.
The present study represents one of the first attempts to explicitly and systematically investigate the impact of customer characteristics and behavior on perceived service quality. The fact that the largest and richest framework for understanding customer evaluations and preferences for service and service delivery presently lacks in the understanding of Technology-Based Self-Service delivery is more than somewhat problematic.

Garvin classifies the definitions of quality found in strategic management literature into five categories:

- Quality synonymous with excellence and almost the converse of mass production.
- Quality as product-based, which suggests that differences between products can be objectively measured on the basis of different attributes.
- Quality as user-based, a subjective measure assuming that delivering high quality means satisfying the needs of the customer and efforts to satisfy the target customer.
- Quality as manufacturing-based.
- Quality as value-based.

Perceived service quality is a subjective customer evaluation. If we relate to technology-based self-service, it may be argued that some aspects are less abstract and less heterogeneous than personnel-based service. Perceived service quality is an overall evaluation process similar to an attitude. Service quality determinants related to technology input and customer input. In Technology-Based Self-Service there would also be an evaluation process related to satisfaction. Satisfaction is a wider judgment involving more determinants than service quality and in the case of Technology-Based Self-Service; it could mean that there are attributes about the Technology-Based Self-Service that do not concern service quality, but rather satisfaction.

Thus, explicit research in service quality did not start until the early 1980’s but service quality today dominates service-marketing research and is the preferred approach to understanding what customers value when receiving service (Fisk et al, 1993). Like other marketing-oriented quality research, service quality has become user-based, meaning “quality is in the eye of the beholder”; a subjective measure assuming that high quality means satisfying the needs of the customer.
2.13 **Suggested framework**

While using technological devices, a knowledgeable customer should be accurate and know the wider range of technological features to regard them as precise, efficient or enjoyable. Moreover most of the companies are showing interest to know what features of Technology-Based Self-Service will be appreciated by the customer, this will allow companies to concentrate more on their design, upgrading and marketing of Technology-Based Self-Service, which will have significant impact on customer evaluation about service quality.

In this study, we are interested in customers’ attitudes and preferences towards Technology-Based Self-Service from service quality perspective; several theoretical procedures are defined previously. The background could be problematic from an adoption/diffusion approach. But to prefer a service-quality perspective means that we stress more on service issues and our main interest to know customers attitudes and how to satisfy customers with service quality we want to learn about customer-perceived service quality. The service-quality dimensions are similar to general models of customer-perceived service quality, although some differences can be found.

As we have seen, previous empirical and theoretical models can help to identify relevant service quality aspects. This increases to understand customers’ evaluations on Technology-Based Self-Service when developing a conceptual framework and performing the initial empirical studies. Adoption/diffusion research in Technology-Based Self-Service has considered that the role not only of customer-perceived benefits, but also customer characteristics. Moreover research in human-computer interaction provides detail understanding about customers’ evaluation and their preferences towards computer related technologies like ATMs, self-ticket vending machines, etc.

In order to enhance our knowledge about customer evaluations about service quality with use of Technology-Based Self-Service we need to set goals our self that how many objects of what kind have to consider for our empirical study and the limitations for that. When specifying the research issues, we concluded that in order to understand customers’
attitudes towards using Technology-Based Self-Service from a service quality perspective, we needed to investigate a relatively wide context. As indicated, we need to understand not only the quality attributes of the specific service option, but also the role of customer’s characteristics.

Based on qualitative and quantitive literature reviews we are going to describe customer attitudes and preferences towards Technology-Based Self-Service with the perspective of service quality. Customer characteristics and technological attributes will be presented and discussed in Table 1. Customer characteristics in terms of five categories: demographics, personality, behavioral, relationship atmosphere and general attitudes.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Factors</th>
<th>Operationalization</th>
</tr>
</thead>
</table>
| Demographic characteristics | 1. Age  
2. Education  
3. Social integration | Identify the effect on service quality based on these characteristics |
| Personality-based characteristics | 4. Impatience/time pressure  
5. Social risk  
6. Self esteem/pride | Identify the effect on service quality in terms of personality-based Characteristics |
| Behavioral background characteristics | 7. Self-motivation  
8. Consumption rate of specific technology  
9. Technological experiences | Identify the customer experiences how frequently they use these services |
| Relationship atmosphere | 10. Commitment | Identify the effect on service quality based on these characteristics. |
| General attitudes | 11. Need for independence  
12. Social interaction  
13. Attitude towards using Technology-Based Self-Service | Identify the effect on service quality based on these characteristics. |

*Table 1 Established factors and operationalization of customer characteristics and technology based attributes*
Chapter 3
METHODOLOGY

In this chapter, we are going to discuss briefly about the methodology. We specifically discuss about the methods and approaches like research purpose, research strategy, research approach and also about the simple data collection method, data analysis methods are brought up in the discussion.

The first sections are to describe the general approach and design of the present study. As a guideline, this research is started by choosing which strategy is applicable throughout our study. Apart from the various preliminary studies, this study was based on four types’ theory, perspective, research objects and analytical framework. The process was developed in three corresponding stages. First, literature on research in technology-based self-service from various theoretical areas was reviewed. Second, based on what we learnt from literature comparing with qualitative and quantitative field studies in Technology-Based Self-Service. Third, testing and validation of the conceptual framework were performed in two field studies.

The aim of conducting a research is to formulate questions and to find out the answers for those (Dane 1990). The aim of academic research can be explanatory (why), exploratory (what) or descriptive (how). It’s important to choose right strategy which will fit the purpose of research. According to Sekaran (2000) exploratory studies will be preferred when there is little information available about the problem or when no resources are available to solve the problem or research problems that haven’t been solved in past.

Descriptive study is undertaken in order to ascertain and be able to describe the characteristics of the variables of interest in a situation (Sekaran 2000). For example it’s like describing a class room in terms of percentage, age’s compositions, and number of course taken by them. This research is basically descriptive, but also to some extent explanatory and exploratory. They cover three questions what, how, and why, e.g. what
customer characteristics are the relevant quality determinants; how do customers evaluate service quality of Technology-Based Self-Service; why do customers prefer Technology-Based Self-Service. We are trying to know and find out the customer attitudes and preferences towards self-service technologies (ATMs) with service quality perspective.

3.1 Research strategy
There are mainly two kinds of strategies qualitative, and quantitative approaches. According to Yin (2003) the best approach to use for a study depends upon the purpose of the study and the accompanying research question. Quantitative research is based on number of people with calculative approaches and methods. This strategy concerned with calculating frequency data using statistic and mathematical tools. Quantitative research mostly used with in life sciences and the purpose is usually explanatory to describe about the relationships, to allow generalization and to enable predictions about the future (Wallstrom 2002).

On the other hand, qualitative research is more theoretical and provides deeper understanding about the phenomena under deeper investigation, using tools like personal or open interviews about a topic to acquire more detailed information, to define and explain the problem. As it stated by Creswell (1994) a qualitative study is defined as an inquiry process of a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted in a natural setting.

Both types of research are vital to analyze and to evaluate the cause of research problem. It is important to know about the customers attitudes towards adoption of self-service technologies, whether the customers are satisfied or not with the offerings or services of the company. So the customer survey will be the right one to know about the customers what they think about the offerings and services of the company.

Our research concerns with both qualitative and quantitative strategy, we try to know about the customers’ attitudes and preference toward self-service technology (ATMs) with service quality perspective rather than personal based services.
3.2 Presentation of chosen research object

ATMs are one of the technology based self services which are more widely used by the customers. So we have chosen ATMs in Karlstad as a research object for our empirical study, there are mainly four banks offering ATMs services to the customers namely SEB, Foreingssparbanken, Nordea, and Handelsbanken. Moreover, it is interesting to identify the differences and similarities between their ways of services (ATMs) to the customers’. But we are trying to analyze with perceptive of service quality to find out customers attitudes and adoption behavior towards ATMs with out concerned of service differences between the organizations.

To reach the purpose we conducted a pilot case study to know the customers adoption and attitude towards using ATMs and their perception towards self-service technologies. 150 respondents are interviewed based on questionnaire. Data analysis is mainly based on both qualitative and quantitative results, supported by the qualitative information and literature reviews.

3.3 Criteria for customer selection:

In our research, customers selected as per our convenience for interviews are students. In the beginning we interacted with some students directly rather than distributing questions to them, and gathered the information with open interviews. In the next step we started using quantitative method with distributing questionnaire to the students to know their attitude towards Technology-Based Self-Service.

3.4 Data collection method

In this section, basic data collection method can be found within the methodological framework of customers’ attitudes towards Technology-Based Self-Service and service quality. Data is often divided and categorized in to two parts qualitative and quantitative. In qualitative method, data collection can be obtained from different sources. Customer’s action and words will represent the quality of the data from investigations and it requires specific method to follow by the research to catch the essence of customer’s perception and their behaviour.
According to Yin (2003) the key aspects to captivate are

- Documentation
- Archival Records
- Interviews
- Direct Observations
- Participant Observations
- Physical aircraft

In the service literature, researchers have used several methods of data collection for investigating and studying service quality.

For instance, we can find:

- Interview studies in the form of personal interviews, group interviews or questionnaire-based surveys
- Literature review
- Experimental studies and
- Observational studies

1. Data collection through interviews, either personal interviews or surveys, is most commonly used. In this study, the interview and questionnaire method is logical, as our primary interest is to understand customers’ attitudes and satisfaction level towards Technology-Based Self-Service. Whether interviews are personal interviews, group interviews or questionnaires, they allow us to know customer’s attitudes towards Technology-Based Self-Service on service quality aspect. We selected questionnaire as our main approach to evaluate customers’ perception on service quality and their preference and attitude towards Technology-Based Self-Service. In the beginning we did open interviews with 26 students to know the main factors effecting Technology-Based Self-Service (ATMs) and then we prepared a preliminary general questionnaire and distributed among 50 students to know their opinion towards Technology-Based Self-Service. In the second stage we gone deep in to the topic and prepared second version of questionnaire relevant to the topic and the factors what we find in personal interviews about the customer characteristics and technological attributes. This time we checked this questionnaire on 50 students again. We prepared three types of questionnaire and
checked it every time on students to get a better and good questionnaire in final. In this way we interviewed 150 students with the help of questionnaire to know their attitude and perception towards Technology-Based Self-Service.

2. We have chosen literature review as the principal research method for our empirical research, as it requires deeper investigation in literature review and integration. In our research study literature review used in the first phase of our research, in order to understand the customers’ attitudes towards Technology-Based Self-Service with perceived service quality, it is always important to compare the new empirical case research with previously done research theories.

3. Experimental studies are often of a purely explanatory nature, measuring the impact of certain factors on dependent variables. Experimental studies can be performed on an observational or survey basis. Through a questionnaire it is possible to describe certain situations and have control over the surrounding factors. However, this study is explicitly focused on the customers’ behaviour and evaluation, so we selected both qualitative and quantitative method to collect the data.

4. Observational studies may not be useful method in service quality research, as this study concerns with customers mental evaluations regarding self-service technologies, as we are interested to know the customer preference and perception in use of Technology-Based Self-Service with service quality perspective. As service quality process is a subjective evaluation process, objective observations impact on service quality could be misleading.

Finally in our research, we gathered the data based on both qualitative and quantitative method with interviews and questionnaire. It’s a common approach to collect the data through interviews in self-service technology research. Personal and open interviews conducted with the students to know the perception of adoption and attitude towards self-service technologies (ATMs). We are aware about questionnaire given to the students are easily understandable and make them to fill the questionnaire correctly.
3.5 Questionnaire

Questionnaire, the main tool used in this research to understand the customers’ attitudes and adoption behaviour towards self-service technologies. Questionnaire is basically depends up on research questions. As prescribed by Parasuraman et al (1991) a five point scale (5=strongly disagree, 1=strongly agree) was used in our questionnaire, also consists of multiple choice questions, customer can choose which ever is appreciable for them. Questions are made as sensible and easy to understand as possible. The questionnaire were partly based on previous empirical studies and partly based on customers’ statements from the qualitative field studies and from open interviews.

3.6 Quality standards

Have we established the correct operational measure for the concepts being studies? In this research we should ask our-self questions about, are we really measuring factors that drive customers’ perception on service quality in use of Technology-Based Self-Service. According to Yin (2003) there are different ways like multiple source information, establishing evidence to assess the quality standards of the present empirical research, in multiple source information two kind of source were used, firstly literature review on previous empirical research cases, secondly the data in the form of both qualitative and quantitative study gathered from customers with the help of questionnaire. Establishing chain of evidence was used in two kinds, mainly literate review bring us an emerged frame work, which is important for our study to compare our new findings with previously done empirical research cases, a pilot study undertaken to gather the data. On the other hand we reviewed the reliability of our questionnaire, as we designed our questionnaire includes customers’ evaluation on service quality, preference and adoption attitudes with use of Technology-Based Self-Service.
Chapter 4
DATA PRESENTATION AND ANALYSIS

In this chapter, the empirical data collected will be presented according to the research questions discussed in the early chapters after that we analyse the data comparing with the previous researches and present our findings.

In this study we used qualitative results as preliminary step to quantitative studies. This preliminary step is based on a qualitative approach with qualitative data acquired through open interviews with 26 students, in order to develop the conceptual framework or analytical model for the study. The qualitative data is based on descriptive information of respondents’ own words. Two major qualitative and explorative studies with the same purpose were performed based on personal interviews face to face with students. The interviews were semi-structured and the interview guides were based on open ended questions. The exploratory purpose of the study is to get an idea of the attributes that customers relate to service quality and the individual characteristics which may affect the evaluation. We took qualitative data as a preliminary approach to quantitative studies. From the qualitative results we got some factors of ATMs which has effect on service quality, general ideas and comments about ATMs. These factors were used in the questionnaire for quantitative studies. Research results show that younger, better educated, socially active people are likely to adopt technological innovations such as technology-based service and self-service options. Both the results of qualitative and quantitative are presented in the section that follows.

4.1 Data analysis
This chapter discusses the results of the customers’ perception on service quality survey that we received from customers in our pilot study. We gathered the data in a simple manner for the pilot study, questionnaire and interaction with respondents’ has given a lot of information to analyze results based on Technology-Based Self-Service attributes and customer characteristics. Characteristics emphasized in to five categories demographic,
personality-based, behavioural, relationship atmosphere and general attitudes, these customer characteristics are divided into thirteen service quality determinants.

For each determinant, we present specific aspects that explain how each customer characteristic and Technology-Based Self-Service attribute can differentiate or categorize between favourable and unfavourable customers’ attitudes towards Technology-Based Self-Service. Based on the empirical data total of 150 questionnaire responses were received.

Table 2 illustrates our research results, interestingly most of the respondents are positive towards use of Technology-Based Self-Service and majority of the respondents were satisfied. We presented the results in calculating the percentages of total respondents’ agree/disagree about customer characteristics and technology attributes on service quality perspective. We are going to give results and inferences to all the determinants in theoretical way as per research questions 1 & 2 after the table 2.

<table>
<thead>
<tr>
<th>Characteristics and attributes</th>
<th>Factors influencing service quality in Technology-Based Self-Service (ATMs)</th>
<th>Rate of Analysis</th>
<th>Percentage of effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic characteristics</td>
<td></td>
<td>Agree / Disagree Effect on service quality</td>
<td></td>
</tr>
<tr>
<td>1. Age</td>
<td>X</td>
<td>Agree 95%</td>
<td></td>
</tr>
<tr>
<td>2. Education</td>
<td>X</td>
<td>Agree 71%</td>
<td></td>
</tr>
<tr>
<td>3. Social integration</td>
<td>X</td>
<td>Agree 70%</td>
<td></td>
</tr>
<tr>
<td>Personality-based characteristics</td>
<td></td>
<td>Agree 93%</td>
<td></td>
</tr>
<tr>
<td>4. Impatience/time pressure</td>
<td>X</td>
<td>Agree 95%</td>
<td></td>
</tr>
<tr>
<td>5. Social risk</td>
<td>X</td>
<td>Agree 71%</td>
<td></td>
</tr>
<tr>
<td>6. Self esteem/pride</td>
<td>X</td>
<td>Agree 70%</td>
<td></td>
</tr>
<tr>
<td>Behavioral background</td>
<td></td>
<td>Agree 94%</td>
<td></td>
</tr>
<tr>
<td>characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Self-motivation</td>
<td></td>
<td>Agree 94%</td>
<td></td>
</tr>
<tr>
<td>8. Consumption rate of specific technology</td>
<td>X</td>
<td>Agree 93%</td>
<td></td>
</tr>
<tr>
<td>9. Technological experiences</td>
<td></td>
<td>Agree 93%</td>
<td></td>
</tr>
</tbody>
</table>
Table 2 Customers (Agree/Disagree) level towards determinants effecting on service quality in using Technology-Based Self-Service

<table>
<thead>
<tr>
<th>Relationship atmosphere</th>
<th>10. Commitment</th>
<th>Agree</th>
<th>94%</th>
</tr>
</thead>
<tbody>
<tr>
<td>General attitudes</td>
<td>11. Need for independence</td>
<td>Agree</td>
<td>87%</td>
</tr>
<tr>
<td></td>
<td>12. Social interaction</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>13. Attitude towards using Technology-Based Self-Service</td>
<td>Agree</td>
<td>90%</td>
</tr>
<tr>
<td>Technology based attributes</td>
<td>14. Speed</td>
<td>Agree</td>
<td>96%</td>
</tr>
<tr>
<td></td>
<td>15. Enjoyment</td>
<td>Agree</td>
<td>89%</td>
</tr>
<tr>
<td></td>
<td>16. Reliability</td>
<td>Agree</td>
<td>82%</td>
</tr>
<tr>
<td></td>
<td>17. Ease of use</td>
<td>Agree</td>
<td>96%</td>
</tr>
<tr>
<td></td>
<td>18. Control</td>
<td>Agree</td>
<td>93%</td>
</tr>
<tr>
<td></td>
<td>19. Physical appearance</td>
<td>Agree</td>
<td>95%</td>
</tr>
<tr>
<td></td>
<td>20. Personnel-based support</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

4.1.1 Customer characteristics as determinants of service quality

- **Demographic characteristics**
  
  AGE has positive effect on service quality as most of the respondents are students. Most of the students prefer ATMs due to instant money and fast accessibility. Aspects effect on service quality is based on respondents’ attitude to be:
  
  - Willing to use technology
  - More exposure to media
  - Aware of new technologies

  EDUCATION implies that people with higher education level have positive attitude towards Technology-Based Self-Service and in general, it has positive effect on service quality. The respondents all are students and educated so everyone prefer to use ATMs and likely to adopt new technological innovations. Aspects effect on service quality based on respondents’ attitude to be:
- Ability to handle complex tasks
- More exposure to media and more awareness of new technologies

SOCIAL INTEGRATION has a positive effect on service quality self-checkout. As a result, two aspects to the relationship between social integration and attitudes towards technology:
- Awareness
- Loneliness

○ Personality-based characteristics

IMPATIENCE/TIME PRESSURE all the respondents are students, out of 150 students 95% strongly agree that impatience/time has positive effect on service quality. In the qualitative field-studies, speed was the single most commonly mentioned aspect with a positive effect. Most of the students are impatient to wait in bank lines and they feel hurry that the service should be done immediately. Aspects of the people who:
- Just want the service immediately done
- Have difficulties, waiting in line
- Have limited time resources and hurry

SOCIAL RISK AVERSION 71% of students agree that social risk involved in operating ATMs and it has negative influence on service quality, the people who perceive social risk with trying a new Technology-Based Self-Service will value ease of use more than others, Dabholkar (1996) discusses social risk and service quality in the sense that people who perceive social risk (i.e. they may fear looking foolish as they struggle to use it). Respondents afraid about:
- Insecurity
- Fear if anything goes wrong

SELF-ESTEEM/PRIDE of being able to handle Technology-Based Self-Service (ATMs) has positive effect on service quality. 70% of students feel pride to manage and take part in technological developments. Aspects that respondents derive:
- People feel pride in managing by themselves
- People feel pride to take part in technological development
- **Behavioural background characteristics**

SELF-MOTIVATION 94% of students agrees that it has positive effect on service quality and they feel that customers who are motivated can easily access the ATM service. The assumption here is that the respondents’ willingness to do her best when learning the system, or in ongoing use, will affect her performance and also perceptions of service quality. Aspects involve:

- Motivation to learn the system
- Accuracy, effort and speed to perform customers’ role

CONSUMPTION RATE of a specific technology and service company has a positive effect on service quality (as many self-services technologies are the only service option, we can assume that the usage rate of the core service is directly related to that of the self-service technology). 100% students use ATMs frequently and familiar with this service. Aspects affect service quality involves:

- Familiarity with service
- Frequency of usage

TECHNOLOGICAL EXPERIENCE as the more customer experiences technological products, the more favourable attitude towards Technology-Based Self-Service and positive effect on service quality. 93% students are familiar with technological products and 92% students like to adopt new technological innovations. Aspects involve:

- Experienced users learn new system easily
- Enhanced performance

- **Relational atmosphere**

ORGANISATIONAL COMMITMENT 94% students trust the ATM banking service and they are loyal towards the bank. The more committed the customer is to company, the more positive perception of the Technology-Based Self-Service and positive effect on service quality (customer committed to a service organisation will contribute to higher levels of technical (output) and functional (process) quality to the service encounters (Kelley et al, 1990:322)). Aspects committed to:

- Evaluate the service favourably
- Trust and acceptance of self-service option
○ General attitudes

NEED FOR INDEPENDENCE 87% students are interested to manage service by themselves. Independent towards receiving service has a positive effect on service quality, that in the self-service system customers’ play two roles, the role of the service customer and the role of the partial employee. Based on group discussions of attitudes towards self-services and self-service machines, participants wanted to be less dependent on others when receiving service. In qualitative study, “Machines make us more independent”; “I like to depend on my self”. Respondents:
  • Feel pleasure managing by themselves

NEED FOR SOCIAL INTERACTION has positive effect on service quality, when we take some respondents comments who need interaction “I think the human being is a social creature”; “I feel it more pleasant to borrow from a person than from a machine”, some people prefer human interaction and who place value on social interaction. Finally the people who want to be less dependent on others are favourable.
  • Demanding dependent/independent attention

ATTITUDE TOWARDS USING TECHNOLOGY 90% students are favourable attitude towards using Technology-Based Self-Service and the students agree that they are benefited by using Technology-Based Self-Service and it has positive effect on service quality. Aspect involves:
  • Curious and interested in technological developments

4.1.2 Attributes of the Technology-Based Self-Service as a determinants of service quality

This section presents attribute-based determinants of service quality related to Technology-Based Self-Service system that can be evaluated by the customer. These determinants are generated from the quantitative field study in comparison with previous within the theoretical framework.

SPEED OF DELIVERY was the most common factor having positive effect on service quality in self-service system. 96% of students agree that withdrawing money using ATMs is fast when compared to personal banking. Aspects effected:
• Time spent in lines
• Time to complete task

ENJOYMENT has positive impact on service quality in self-service system. Technology and delivery process involves as features of enjoyment. 89% of students agree that operating ATM service is enjoyable. Respondents’ enjoyment involves:
  • Pleasant to use new technology
  • Comfort

CONTROL found positive influence on service quality in self-service system. Dabholkar (1996) found expected control to have the second most significant impact on expected service quality from using the Technology-Based Self-Service. 93% of students agree that they have complete control over the ATM system because they always get prompt service while withdrawing money from ATMs. Respondents’ control involves:
  • Accuracy of the outcome
  • Influence the speed

RELIABILITY found positive effect on service quality when compared with safety or security. 82% of students agree that ATM service is reliable. Respondents’ reliability includes:
  • Accuracy (e.g. correct price)
  • Safety/security (theft, access personal information)

EASE OF USE found positive effect on service quality. 96% of students feel easy to understand how to use ATM and they feel it is not complicated in use. Respondents’ ease of use concerns:
  • Physical effort
  • Easy to learn system
  • Easy to remember

COMMUNICATION found positive effect on service quality during introductory phase. Respondents’ communication concerns:
  • Role of the customer in services
  • Explains benefits

PERSONNEL-BASED SUPPORT found positive effect on service quality. It concerns with friendliness and helpfulness. Respondents expect:
Politeness and courtesy
Visibility and responsiveness

Physical appearance found positive effect on service quality in self-service system. 95% of students agree that ATM service seems to be properly serviced and well maintained. Respondents expect:
- Good appearance and maintenance of the machine
- Technology up-to-date

From Figure 7, speed of delivery is the most important factor having positive effect on service quality. This implies that, for a given speed of delivery, the distracted customer participating in the delivery process will perceive greater speed of delivery. Most findings in this study could however be categorized under either mental or physiological effort. In both cases, mental effort was mostly referred to in terms of difficulties during the learning process. Ease of use has a positive effect on service quality. The qualitative research suggested that personalization aspect and suggested that well-being of the personnel had a direct positive effect on their evaluation of the service.

In this study, several respondents made statements that can be related to the courtesy or personalization aspect and suggested that well-being of the personnel had a direct positive effect on their evaluation of the service.
some potential customers of technology-based self-service options were concerned about the effort required to use such options and the complexity of the process of service delivery. The study found that expected control, expected enjoyment and expected ease of use had significant impact on expected service quality and the intentions to use the Technology-Based Self-Service. As a result, the present study represents the first known attempt to systematically investigate, from a service-quality perspective, customer’s experiences of Technology-Based Self-Service available in the market place.

Parasuraman et al (1988) have identified reliability of the service as an important determinant of service quality. Langeard et al (1981) found that some people enjoy playing with machines and suggest that these people may prefer self-service options that allow them to do so. Thus, for technology-based self-service options, we expect enjoyment to be important to customers in evaluating such options.

4.2 Technology-based encounters
The research reveals that customer experiences with self-service technologies, suggest some different themes in terms of customer satisfaction and dissatisfaction. Here we are going to explain some causes/reasons involved behind, customer satisfaction and dissatisfaction by using Self-Service Technologies and vice versa, as we differentiated the answers based on the open interviews and collected some of the important attributes the customer feels appreciable for them, on the other hand the problems they are facing with the using of ATM’s. We differentiated the respondents answers namely satisfied with use of self-service technologies and dissatisfied with self-service technologies as per research question 3.

From figure 8, it was clear that the 78% students are fully satisfied and 21% students are just satisfied and 1% are neither satisfied and nor dissatisfied with ATM service. Overall satisfaction level about ATMs is 99%.
4.2.1 Satisfied with Self-Service Technologies

In this topic we will provide deeper view to reader about the causes/reasons involved behind made the respondents satisfied with use of Self-Service Technologies

Solved and intensified need

Respondents in this category were enjoying the ease of use with the technology when they are in difficult situation for example, a cash machine that provide services, allowing customer to get cash to pay a cab driver and get to work on time when his/her car had broken down.

Better than the alternative

Most of the respondents are eager to complete their work as soon as possible to save time and money, so the customers are willing to use technology-based service (ATM’s) was in some way better than the alternative easy to use, save time, available when and where they needed it, saved money.

Did its job

In spite of so many failures of technology, many respondents are simply thrilled when the SST (ATMs) works as it should.
4.2.2 Dissatisfied with Self-Service Technologies:

Here we will describe what are the reasons and causes involved with customer dissatisfaction with use of Self-Service Technologies (ATMs)

*Technology failure*

Many respondents are dissatisfied with use of SST is relate to the technology, simply not working as promised “it isn’t available when needed, PIN numbers don’t work, or systems are offline”.

*Process failure*

Often the technology seems to work, but later the customer discovers that a back-office or follow-up process, which they assumed was connected, doesn’t work. For example, a product order seems to be placed successfully, but it never arrives or the wrong product is delivered.

*Poor design*

Many stories related to the customer’s dissatisfaction with how the technology is designed, in terms of either the technical process or actual service design. One of the respondents expressed that “The directions for operating ATM’s are not in English.”

*Customer-driven failure*

In some cases the respondents expressed their own inabilities or failures to use the technology properly. These types of stories are much less common than stories blaming the technology or the company.

4.3 Reasons for Rejection Behavior

The following are the customer’s comments about the usage of ATMS

- “The ATM’s near my home always in break down”
- “We can’t draw more than prescribed money in ATM’s in a week” (Especially in some of the Bank’s)
- “Our ATM card only work’s in our bank ATM’s only”
- “We don’t find any thing different by using this one, we have to stand in long queue to use this”
- “The directions for operating are not in English”
- “I use the ATM’s when the bank is close only; I prefer the personal service offer”
‘I am disappointed because some times, I do not receive a receipt’

‘There are some machines that have been out of order for two months now, and as a result, you get mad’

‘Just to see a machine out of order is disturbing’

Finally, some respondents interviewed in the qualitative study mentioned that reliability and accuracy of the outcome would be relevant for evaluating technology-based self-service options. Respondents in the qualitative investigation said that they would be more likely to use a technology-based self-service option if it looked like something that would be enjoyable.

In this total part, customer characteristics, Technology-Based Self-Service determinants and outcomes of perceived service quality of participating in technology-based self-service have been generated. The construction of the framework and the determinants were based on both qualitative and quantitative field studies and comparison to present literature on service quality and other related to literature on technology-based self-service. Hence, the present framework should be viewed as a descriptive link between present service-quality theory and customer’s evaluations of technology-based self-service in practice. The supported determinants can be summarized in to the following Figure 5. Finally, this model describes the direct relationship between customer-characteristics, technology-specific determinants effect on enhanced service quality, preferences for the Technology-Based Self-Service and customer satisfaction on Technology-Based Self-Service.
Figure 8 Established following Dabholkar conceptualisation (1996) A model of technology-based self-services understanding customer satisfaction for enhanced service quality
Chapter 5
CONCLUSION AND IMPLICATIONS

In this chapter we will discuss about the conclusions which are drawn from the findings which we have discussed earlier in the data analysis. The conclusions are drawn according to the research questions mentioned in the earlier chapters. Finally we end up the discussion with implications for theory and for managers and practitioners.

5.1 CONCLUSIONS

The results show that customers evaluate Technology-Based Self-Service in terms of service quality. For management, it is very important to understand the attributes that are the base for customer evaluations, whether they have the positive or negative effect on service quality. Service companies need to learn the important aspects of their Technology-Based Self-Service and how these relate to their customers and the overall service level of the company.

In this study, it is apparent that aspects of speed, ease of use, reliability and enjoyment need to be considered. Service companies need to struggle for excellence on these aspects as well as communicate their benefits. The result imply that management should not neglect issues concerning to enjoyment and curiosity. Although enjoyment was found to be an important factor, speed, ease of use and other efficiency-related factors are more crucial in the long run. The Technology-Based Self-Service should look and work like “user-friendly”.

These results are in accordance with the development within the banking sector, where ATMs today are noticeably more colorful and user-friendly. Normann (1983) warns not to introduce services that cannot match the quality level of other services, advice that appears to be relevant for Technology-Based Self-Service as well. It seems that Technology-Based Self-Service is most beneficial to loyal and committed customers.
5.2 IMPLICATIONS

This study has examined what aspects of the technology-based self-service system the service customer takes into consideration when evaluating the quality of such services. Moreover, this study has considered the impact the implementation of Technology-Based Self-Service can have on the overall service quality of a service firm. Finally, the crucial relationship between customer-perceived service quality and customer preferences was investigated. There are different types of self-service technologies in the market today. As we did our research on a prescribed self-service technology (ATMs) accordingly to prescribed length and limitation. We had a better view about the customers’ attitudes and preferences towards ATMs. It will be interesting to know how the customers’ preferences, attitudes and perception towards service quality with other self-service options.

We strongly believe the banking organizations have to implement new technological aspects with strong in security system in way of ensuring the customer about their transactions carried out in a perfect manner. In the future we hope that many of the companies will be able to deliver highly trustworthy, approachable, modified services through technology and will offer easy and effective means for service recovery when failure does occur. Following are some of the issues where the financial organizations have to concentrate more on quality in delivering the services, to the customers, and make them satisfied with their offerings. Issues to concentrate on:

- Dissatisfied Customers, so that service recovery can attempt.
- Customer requirements or expectations for service.
- Monitor and track performance.
- Company performance compared with competitors.
- Gaps between customer expectations and perceptions.
- Effectiveness of changes in service delivery.
- Service performance of individuals and teams for evaluation, recognition, and rewards.
- Customer expectations for a new service.
- Changing customer expectations in an industry.
Future expectations of customers.

5.3 Service recovery suggestions
- Fail-safe your service- do it right the first time!
- Welcome and encourage complaints
- Act quickly
- Treat customers fairly
Chapter 6
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Hyper Links:
www.iceman.strana.de/atmwp.doc ,
http://ritim.cba.uri.edu/bit/bits15.htm
APPENDIX

QUESTIONNAIRE

Questionnaire, the main tool used in this research to understand the customers’ attitude and adoption behaviour towards self-service technologies. Questionnaire is basically depends up on research questions. A five point scale (strongly disagree / disagree / neither agree nor disagree / agree / strongly agree) strongly disagree=5 and strongly agree =1 was used in our questionnaire, also consists of multiple choice questions, customer can choose which ever is appreciable for them. Questions are made as sensible and easy to understand.

1. Age group (years):
   - □ Less than 20
   - □ 20-30
   - □ 31-40
   - □ More than 40

2. Current Education Level:
   - □ Bachelors
   - □ Masters
   - □ Others

Consumption rate
3. How often do you use Bankomat/Minuten?
   - (Daily / 0-5 times per month / 6-10 times / more than 10 times)

Technological experience
4. I am very familiar with technological products (e.g. computers, internet, cellular).
   - (Strongly disagree / disagree / neither agree nor disagree / agree / strongly agree)

5. I am the first to adopt technological innovations (e.g. computers, internet, cellular).
   - (Strongly disagree / disagree / neither agree nor disagree / agree / strongly agree)

Need for independence
6. I look positively on technological development towards the customer managing by him / her self.
   - (Strongly disagree / disagree / neither agree nor disagree / agree / strongly agree)

Self-esteem
7. I feel that I am keeping up with technological developments when I use technologies like the Bankomat/Minuten.
   - (Strongly disagree / disagree / neither agree nor disagree / agree / strongly agree)

8. I consider there to be a degree of value/respect associated with self-service options like the Bankomat/Minuten.
   - (Strongly disagree / disagree / neither agree nor disagree / agree / strongly agree)

Self-motivation
9. I feel the service is easily accessible from Bankomat/Minuten.
   - (Strongly disagree / disagree / neither agree nor disagree / agree / strongly agree)
Impatience
10. I always seem to be in a hurry and I feel difficult to wait in bank lines.
(Strongly disagree /disagree / neither agree nor disagree / agree / strongly agree)

Control
11. I always get prompt service while withdrawing money from Bankomat/Minuten.
(Strongly disagree /disagree / neither agree nor disagree / agree / strongly agree)

Social risk
12. If something should go wrong when I am withdrawing the money, I feel I am being thought dishonest or unfair.
(Strongly disagree /disagree / neither agree nor disagree / agree / strongly agree)

Commitment
13. I am loyal towards the Bankomat/Minuten.
(Strongly disagree /disagree / neither agree nor disagree / agree / strongly agree)

14. I trust the Bankomat Banking service.
(Strongly disagree /disagree / neither agree nor disagree / agree / strongly agree)

Attitude towards using TBSS
15. I see mostly benefits from using technologies products like Bankomat/Minuten.
(Strongly disagree /disagree / neither agree nor disagree / agree / strongly agree)

Specify _________________________

Reliability
16. Bankomat/Minuten is often broken or out of order.
(Strongly disagree /disagree / neither agree nor disagree / agree / strongly agree)

Speed
17. To withdraw money using Bankomat/Minuten is fast when compared to personal banking.
(Strongly disagree /disagree / neither agree nor disagree / agree / strongly agree)

Enjoyment
18. Operating Bankomat/Minuten service is enjoyable compare to personnel service.
(Strongly disagree /disagree / neither agree nor disagree / agree / strongly agree)

Reliability
(Strongly disagree /disagree / neither agree nor disagree / agree / strongly agree)

Ease of use
20. Using Bankomat/Minuten is not complicated.
(Strongly disagree /disagree / neither agree nor disagree / agree / strongly agree)

21. It is easy to understand how to use the Bankomat/Minuten.
(Strongly disagree /disagree / neither agree nor disagree / agree / strongly agree)

Physical appearance
22. Bankomat/Minuten seems to be properly serviced and well maintained.
(Strongly disagree /disagree / neither agree nor disagree / agree / strongly agree)
23. Please choose a circumstance why you prefer to choose Bankomat/Minuten rather than personal banking.

- [ ] Instant money
- [ ] Long queues in bank to withdraw
- [ ] Managing by yourself
- [ ] Convenient locations of Bankomat/Minuten
- [ ] Round the clock

24. What is your overall satisfaction level about Bankomat?
(Fully dissatisfied / dissatisfied / neither satisfied nor dissatisfied / satisfied / fully satisfied)

25. Other comments about Bankomat.

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## DATA ANALYSIS RESULTS

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Percentage of Agree = \( \frac{\text{Number of respondents strongly agree + agree}}{\text{Total Number of respondents}} \) \times 100

Example for Question No 4: - \( \frac{66 + 74}{150} \times 100 = 93.33\% \)

93% respondents agree that they are familiar with technological products.