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A Review of Self-Service Technology, SERVQUAL and Restaurant Table Management using Queuing Theory

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Abstract:

Customer dissatisfaction in restaurants may be caused by prolonged wait times. We have analysed a wide range of publications to decrease waiting times. The ability of self-service technology to shorten client wait times has been seen as a significant perk. Therefore, the goal of this study was to judge the circumstances in which the use of self-service technology in a service provided procedure could decrease actual waiting times and raise service standards. Numerous researchers have conducted a great deal of research. An effort has been made to review literature and academic articles in this manuscript. I'll also try to describe SERVQUAL, self-service technology, and restaurant table management.

Keywords: Restaurant table management, self-service technology, customer satisfaction, SERVQUAL.

Introduction: There are numerous instances in which we are forced to wait. Every day, we encounter such circumstances at cash registers, in supermarkets, banks, restaurants, etc. Some of the most crucial elements include flavour, cleanliness, the design of the restaurant, and its surroundings. When correctly controlled, these characteristics will be able to draw in a sizable consumer base. However, there is still another issue that must be taken into account, particularly if the restaurant has previously been successful in drawing guests. The length of the customer queue is this factor.

In restaurants, there are frequently waits, especially during lunch and evening. As a result, the queueing theory is appropriate for use in a restaurant setting because there is a waiting queue or queue for clients who cannot be served right away. The results of this investigation supported SERVQUAL's five-dimensional structure, however several of the discovered dimensions and their constituent parts did not match SERVQUAL. The study established five service quality dimensions: tangibility, responsiveness, reliability, and empathy and assurance.

• **Tangibles**: Such as buildings, machinery, and people's outward appearance.

• **Reliability**: The capacity to deliver the given service consistently and correctly.

• **Empathy**: The company's compassionate, individualised treatment of its clients.

• **Responsiveness**: The capacity to assist clients and render prompt service.

• **Assurance**: The ability of staff members to instill confidence and trust by their knowledge and civility.

Theory of queues: A queue of objects waiting for service, including people who are receiving service, is referred to as a queue. Queuing theory is the study of waiting lines or "queues" from a mathematical perspective. In queueing theory, a model is created to project queue sizes and wait times. A customer is someone who is waiting in queue or receiving service, whereas a server is someone who provides that service.

The SERVQUAL scale: The SERVQUAL scale is a survey tool that makes the claim that it can assess the level of quality of service in any type of service organisation based on five criteria: tangibles, dependability, assurance, responsiveness, and empathy.

The SERVQUAL scale created by Parasuraman per detail in 1985, and it was improved upon in 1988, 1991, and 1994. A research project to create such a tool was started in 1985 by Parasuraman et al. The most often used standardised questionnaire to gauge service quality is the SERVQUAL instrument.

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Literature-survey:

About table management-

Customers' discontent with restaurants can be greatly influenced by lengthy wait times. Recognised as an efficient operational strategy, managing restaurant table capacity can be used to shorten customer wait times without investing in expensive capacity development. The procedure by which a manager assigns dining tables to patrons and wait staff stations is known as table management (Bendall, 1995). Additionally, this calls for management of the timing of seat assignments and server station administration (Durocher, 2005). Choosing when and where to seat customers can have a significant impact on a restaurant's bottom line, according to Shioda's and Bertsimas 2003 contact with the manager and owner of Soto's in Atlanta. By boosting table turnover, effective table management can boost income (Thompson, 2002, 2003, Kimes & Thompson, 2004). For instance, dinner tables can be merge to accommodate parties of any size. Combinable table configurations allow restaurants to more easily match client party sizes to the table mix and increase sitting occupancy. Reduced wait times for clients before being seated can be achieved by effective and efficient table management. Customers typically express more dissatisfaction when they must wait for service (Maister, 1985). Customers' wait behaviour is significantly influenced by the length of their initial wait.

Customers could hesitate when they arrive if there are long wait times, or they might leave while they are still waiting if they are not seated at or close to the scheduled time. Restaurant owners can speed up service and cut down on client wait times by changing how the tables are set up. Those studies included the maximum tolerated wait time in their table mix model and used the wait time as a limitation in order to maximise income. Excellent service quality and greater customer satisfaction should result from this method. Although researchers are aware of the advantages of managing tables, they typically only pay attention to revenue management (Shioda and Bertsimas 2003; Thompson 2002, 2003 and Kimes & Thompson, 2004). Those studies included the maximum tolerated interval in their table mix model and used the serving as a limitation in order to maximise income. But since waiting times are closely tied to consumer happiness, the goal of this study is to cut down on them. As a result, waiting times are used in this study as the primary performance indicator for the entire system rather than income, which amply illustrates the benefits of effective table management.

This study mainly focused on how to give an entering dinner party table position and how to merge tables to shorten consumer wait times in order to investigate if dinner table assignment policies aid to enhance system completion. We are also interested in how changes in demand can affect how effective table assignment rules are at reducing wait times.

Reduced wait times for patrons can be achieved by efficient table management in restaurants, which ultimately increases patron happiness. The main advantage of managing tables is that extra capacity may be built without spending money on expensive capacity expansion, such making room for more tables. Equipment, facilities, and personnel are other examples of manageable capacity that are closely tied to service quality. Sill and Decker's (1999) and Sill's (1991, 1994) studies on capacity management science (CMS) go into great detail about these kinds of capacities. 337 Joye Hwang Field, Kiessler (1997) and McKnew, Hueter and Swart (1998) and Thompson (2002, 2003) are other studies that concentrated on controlling certain types of capacities in order to increase a system's efficiency. However, when they need more room, like the installation of new machinery or the physical extension of current facilities, developing and modifying capacity resources can be expensive. As a result, controlling table capacity may be a further efficient and economical strategy to enhance system performance. Management of restaurant tables can increase revenue in addition to cutting down on waiting times. Increased seating occupancy can be achieved by matching a bigger group of patrons with combined tables, which ultimately results in increased sales (Thompson, 2002, 2003; Kimes & Thompson, 2004). Restaurants with combinable tables provide you the option to accommodate larger groups. When two combined tables, such as two four-tops combined for a party of five, do not exactly meet the size of the party, combinability may not be as successful. Additionally, it takes labour to merge tables. Therefore, managing table capacity should take into account the different factors affecting order, together with the circulating of party sizes.

1.The front-to-back policy permitted patrons to take a seat distant from the dining room's back portion (the kitchen or restrooms, for example). When servers come and depart and crockery clinks in these noisy places, customers could become irritated. As a result, clients were given preference for seating in the front section.

2. According to Kimes & Robson (2004) and Robson (2002, 2004), consumers may want or appreciate a fantastic outside view, or they may choose to be situated close to a window or a wall to maintain their privacy. Customers were first seated at a dining room's periphery before being moved to the room's centre.

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3.The antithesis of the Out-in policy was the In-out policy. Customers often want to sit close to intriguing or engaging events or activities, therefore the in-out policy takes this into account when a charm is in the centre, like a buffet station or performance. There are several attractions, such as musical performances or fires.

4. Each seat in any area has equal odds according to the random policy.

About self- service technology-

The use of SSTs in service providing removes the staff of the provider from the transaction and expand the burden of responsibility on the customer to complete the service. Although modifications to distributor are seemingly created with the customer in mind, they frequently require more effort or participation from the client. These and other elements can demoralize customers from experimenting with or utilising the technology. Service delivery need to be aware that when service changes are implemented, a sizeable percentage of the consumer base that the exchange is supposed to benefit may decide not to use the new service format (Langeard per detail, 1981). The service user may not have any strong incentives to switch to a service offered via technology, in contrast to the service provider. In fact, some customers who are unfamiliar with technology and its application may experience worry and anxiety simply because the technology-based service provider option exists (Mick and Fournier, 1998). The addition of an self -service technology to the service encounter may be perceived as a threat by some customers. They might not know how technological issues will be solved, as well (Bitner and Meuter, 1998). Additionally, some customers consider the service interaction as a social one and like better to distribute with humans (Zeithaml and Gilli 1987), whereas others don't see the technology as having a substantial advantage and will carry on doing things the way they have always done. According to Gatignon and Robertson (1991), some customers may feel that the costs of adopting the new innovation and learning how to use it are too high to be beneficial. On the other side, there are also a number of alleged advantages that can entice clients to a technology-based service provider choice. Because they are more user-friendly or convenient than the alternatives, some customers may find the innovation-based options appealing (Meuter per detail, 2000). Other considerations include time and money savings, increased control over service providing, shorter wait times, a higher perceived level of customization, location convenience (Kauffman and Lally,1994), and fun or enjoyment from using the technology (Dabholkar, 1996,1994). Many service providers who adopt a innovation-based user interface do so in an effort to draw in a sizable enough customer base to cover the implementation costs. This can only be done if the service provider is fully aware of the crucial factors that could impact a customer's choice to employ the offered automation.

The automation employed must be advantageous to the user, and the marketing tactics used to persuade users to adopt the automation must address the relevant issues and benefits that the user perceives as advantageous. These regions have been investigated by a number of scholars, and this effort aims to broaden and deepen this field of study. To create a model for the selection of information innovation, Benbasat and Hebert (1994) merged ideas from the theory of reasoned action (Fishbein and Ajzen, 1975) and dispersion of technology (Rogers, 1995) and discovered evidence for a connection between attitude and behavioural intent.

The theory of reasoned action established the relationship between behavioural intention and attitude towards behaviour, and the technology acceptance model (TAM) (Davis, 1989; Davis per detail Adams per detail, 1992;) extends this relationship to the use of computers in the workplace. These investigations produced the theory that perceived usefulness and simplicity of use of the machinery were important factors affecting a person's attitude towards utilising the machine. The situational characteristics outside of the machinery, including noted risk or the desire for communication, which would have also been found important, were not taken into account in the TAM investigations. This research was significant because it demonstrated the significance of technological attitudes in determining behavioural intentions. Despite the fact that research on the application and adoption of SSTs is still in its infancy, significant work has been done in this area. A critical event study, for instance, identified the important elements that influence customers' pleasure or discontent with SST use and discovered that usefulness, usability, accessibility, and convenience all have a substantial impact on that satisfaction (Meuter per detail, 2000).

Dabholkar (1994, 1996) identified control, performance, soften of use, need for human communication, reliability, and speed as important variables in the usage of SSTs, and Bitner (1998) and Meuter discovered support, performance, accuracy, and recovery from error as crucial variables in the usage of automation under specific condition. Other studies have also looked into contributors and inhibitors of "innovation readiness," identified control, convenience, performance, need for human communication, reliable, and speed as critical variables. Although some of these criteria could not be included in this study due to their complexity, their importance to the discussion of technology adoption cannot be disputed.

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Long wait times for customers are a source of discontent

A well-established predictor of perceived service quality and consumer satisfaction is waiting time. Evidence suggests a connection between customer satisfaction and perceived quality of service, actual waiting time, and actual waiting time (Cameron and Baker, 1996; Davis and Maggard, 1990; Katz per detail, 1991; Taylor, 1994, Hui and Tse,1996). However, it has been discovered that actual waiting times have the greatest impact on customer satisfaction and perceived quality of service (Durrande-Moreau, 1999

(1) Table placement and table combinability to enhance service quality as measured by waiting time.

(2) The study's hypotheses looked at whether SST may lead to shorter wait times and higher service standards as well as what conditions would be required for such an improvement.

Little's Theorem

Little's theorem describes the relationship between cycle time, work in progress (i.e., the number of customers/jobs in the system), and through-out rate (i.e., arrival and service rate). It has been shown that this link holds true for a variety of queuing models. The theorem states that the following formula can be used to get the expected number of customers (N) for a system in steady state: The formula

$$L = \lambda T$$

Here, λ represents the average customer arrival rate, and T represents the average customer service time. For example, if the average customer arrival rate λ doubles and the average customer service time (T) remains constant, the number of patrons in the restaurant will increase by a factor of two (L). According to the same reasoning, if the customer service time twice but the customer arrival rate λ stays the same, the total number of patrons in the restaurant will also double. This implies that all that is needed to control the three variables is managerial decisions for any two of them. Three basic relationships can be derived using Little's theorem:

L increases if λ or T increases.

λ increases if L increases or T decreases.

T increases if L increases or λ decreases.

Rust claims that the little's theorem can be helpful in evaluating the performance change that occurs when the system is upgraded and in measuring the maximum operational improvements that can be achieved.

Conclusion:

According to the literature, SSTs are a useful technique to cut waiting times and boost satisfaction (Weijters per detail, 2007). The study's findings, which revealed that SST can shorten wait times and performance conditions, contradict this intuitive concept, which is backed by the application of basic theory of queues (Lambert and Cullen,1987). In addition, policies such as Out-in and Front-to-back generally produced higher performance. This is wonderful news for cutting down on wait times as well as meeting client preferences.

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