| RESEARCH ARTICLE

Self-Service Technology: Benefits and Challenges

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| ABSTRACT

The adoption of self-service technology (SST) has increased significantly in business and society, particularly since the advent of the COVID-19 pandemic. SST is a vital tool for many businesses in their quest to improve operational efficiency and increase profits. However, businesses must weigh the advantages of this technology against its drawbacks before committing to it. This study seeks to investigate the applications and benefits of SST, the challenges of adopting SST, and some implementation ideas for SST techniques. Furthermore, it seeks to examine whether SST techniques are successful and whether managers should consider SST as a strategic objective. The key research question in this study is how SST initiatives can help a business, and what challenges can managers encounter when implementing them. A review of the current literature shows that SST has helped companies increase customer satisfaction, increase management efficiency and effectiveness, cut costs, and increase financial performance. Some of the challenges facing SST usage include customer reluctance, consumer privacy, and substantial investments and costs for implementation.

1. Introduction

Self-service technology (SST) has ushered in a new era of customer service. The days of the passive consumer are gone. Customers nowadays are educated, engaged, and technologically aware. They care about their own consumer experience. They are also less likely to wait for customer care representatives and service agents to be available. They need prompt, trustworthy answers. That usually suggests they want self-service.

Self-service is not a new idea, but it is transforming the way that businesses help their customers. Automatic vending machines were first in 1833, and self-service petrol stations were commonplace in the 1960s. It was in the 1990s that many grocery stores introduced self-service checkout lanes, where customers scanned their own items and paid at the register. There was a need for improvements in online self-service in response to the proliferation of e-commerce in the 1990s and 2000s. Self-service expanded with new digital technologies as consumers were used to doing more of their buying and interacting online. Self-service alternatives are now commonplace in practically every sector, allowing customers to take charge of their experiences.

The term "self-service technology" refers to any kind of automated system that enables customers to carry out service tasks without requiring assistance from an outside party. SST includes a technological interface that allows customers to complete their service requests with little or no assistance from employees. As a result of SST's improved efficiency, speed, and user friendliness, it has been extensively used in today's business world. The major goal of SST is to provide users with the means to meet their own requirements in the most efficient manner possible. As a result, the SSTs that will be uncovered in this article will include all the

features that make up self-service, including service kiosks, software like websites and mobile apps, automated chatbots, and online checkout processes.

Traditional SST uses include automated teller machines (ATMs), gas stations, and kiosks for buying parking tickets and paying for them. Even though the ATM was the first SST to be launched in America, in 1969, it remains by far the most significant SST. Customers like using ATMs because they are quick and easy to use. There is no need to wait in line, and they are only open at certain times. Now, years later, SSTs have been widely adopted and used in places like airports, hotels, and restaurants, with self-checkout lanes at major supermarkets and automated food ordering systems at restaurants among the most visible examples.

Self-service technology (SST) is gaining increasing popularity because of the COVID-19 pandemic epidemic and the radically altered user habits that resulted therefrom. Although the introduction of vaccines has significantly contained the virus, the pandemic was a blessing in disguise, resulting in the adoption of several self-service platforms by a variety of commercial groups. Even though we are presently in a moment of economic recovery, many businesses continue to employ such measures to support more effective operations.

Indeed, the COVID-19 pandemic has created a huge demand for SSTs. As an illustration, the present methods of segregation have resulted in the rise of contactless consumption, in which people avoid physical touch with one another in favor of "healthier" self-service options made possible by technology. Concurrently, consumers place less value on the social contacts that used to be a standard part of most service transactions. Also, the pandemic seems to reinforce the trend toward a more individualistic way of life in modern communities. Individualistic customers value simplicity and being able to do things on their own more and more, so the "do-it-myself" style is preferred. Some customers who are used to digital services might even find face-to-face services to be inconvenient and avoid social situations as a result. To this end, COVID-19's social restrictions and a social isolation trend can be seen, in which people choose to stay away from social activities that make them feel uncomfortable. So, the effects of social distance practices and the trend toward individualism are subtly tied together to redefine consumer service preferences. This makes SSTs a popular choice because they give consumers back their valued "self" (Wang, et al, 2022).

This study attempts to provide a critical analysis of the benefits of SST, the problems of adopting SST, and some implementation ideas for SST techniques. It also seeks to investigate if SST techniques are successful and whether managers should consider SST as a strategic objective. The main research question in this study is: How can the adoption of SST initiatives help the company, and what challenges can managers encounter when implementing them?

2. The Market for SST

A study reported that the SST market was worth over $28 billion in 2019 and that this figure was projected to rise by 6.7% a year between 2020 and 2027 (Grand View Research, 2020). COVID-19's effect led to significant technological advancements, particularly in the areas of remote administration and wireless communication, which fueled the industry's expansion. Figure 1 depicts the current and projected SST market size in the United States by vending machine, ATM, and kiosk type from 2016 to 2019. Demand for automated and self-service equipment, as well as wireless connectivity, technological progress, and remote management systems, are the primary forces propelling the SST markets.
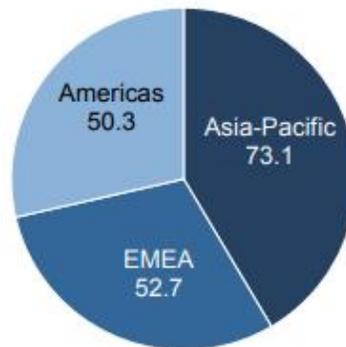
Figure 1

Source: https://www.grandviewresearch.com/industry-analysis/self-service-technology-market
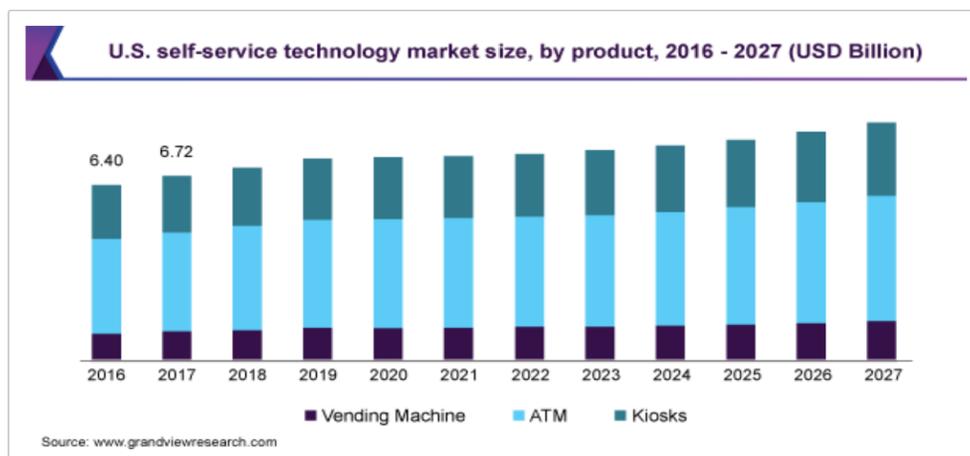
Additionally, Retail Banking Research (RBR) predicted that 1.5 million self-checkout devices would be implemented worldwide by 2026. Europe, America, and the Asia-Pacific have seen an increase in the demand for SST on a worldwide scale. The distribution of self-checkout shipments globally across the three main regions in 2020 is shown in Figure 2. Many retailers are installing cashless self-checkout devices, which will account for 55% of worldwide shipments in 2020. Other retailers in America, such as pharmacies and convenience shops, are also thinking about using SST, while Asia-Pacific has the biggest usage of SST. Major European supermarket chains like Kaufland, Lidl, and Carrefour, continue to invest heavily in SST and self-checkout equipment. Notably, the COVID-19 epidemic changed almost all commercial activities. Because SST guaranteed there is little contact between individuals to restrict the transmission of the virus, it is safe to say that it was one of the breakthroughs during the pandemic.

Figure 2

Source: https://www.rbrlondon.com/wp-content/uploads/2021/07/SCO_Press_Release_050721.pdf

3. Benefits of SST

As with the use of any technology, SST comes with pros and cons. In this section, we will examine some of the advantages of SST from the customer's and the organization's perspectives, the focus being on the latter. From the customer's end, the ability to interact with goods, services, or businesses on one's own terms is the main benefit of self-service technology. In other words, it enables customers to purchase products and services on their own time without feeling rushed or pressured, thereby enhancing the user experience and increasing the probability that the client will come back. Providing information in a self-service manner is frequently more convenient for clients because it allows them to get information more quickly than seeking and chatting with a customer service representative. Other clear advantages of SST for the customer include limited or no human interaction necessary; limited or no queues or wait times; continuous 24/7 access to services; instant and reliable service delivery; choice of many payment options, and access to other services. The discussion below will examine the benefits of SST to organizations.

3.1 Gaining Competitive Advantage

As noted above, SST offers services to consumers with minimal or no human contact. While some SSTs are still in their infancy, others have been operating for some time. Technology advancements have ushered in sophisticated SST systems that offer better customer service than traditional physical service offerings, thereby giving firms a competitive advantage. This is particularly important in today's world where competition has become the norm rather than the exception.

The success of the SST invention may be measured by its ability to provide timely and high-quality service to customers. Customer satisfaction, according to Distanont and Khongmalai (2020), relates to how happy consumers are with the company's capabilities, services, and product offerings. Businesses often use surveys and ratings to ascertain how best to cater to the interests and preferences of their customers by providing top-notch goods and services. However, SST has shown efficiency in guaranteeing customer satisfaction by providing quick access to services with little to no face-to-face contact. A recent study on the tourist sector found that additional functionality offered by the hotel's SST, such as checkout kiosks and smart lexicon boards with search and translate features, led to higher satisfaction with SST. Higher satisfaction was achieved when visitors thought that SST provided better service elements with greater security and customization throughout their interactions with SST (Safaeimanesh et al, 2021).

Figure 3 demonstrates that businesses that established self-service programs had a 3.5% increase in consumer satisfaction compared to businesses without such programs. Simply said, when clients are very delighted with the services they get, they are more inclined to stick with the same service provider for familiarity, thereby giving the business a competitive edge.

Figure 3
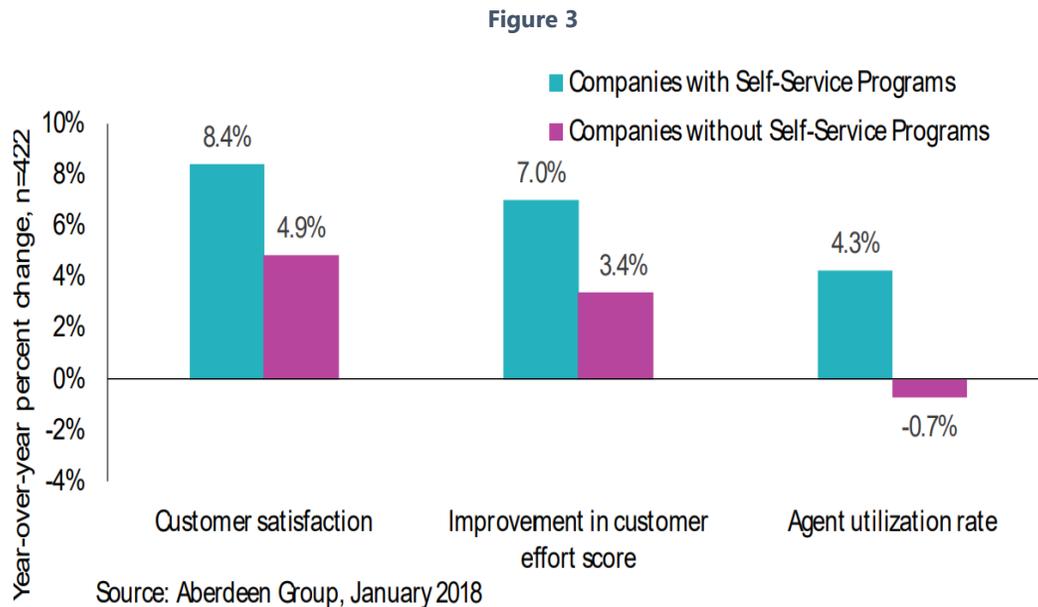
Source: Minkara (2018)

Customer loyalty, on the other hand, is a company's capacity to keep customers for a lengthy period of time. Customer loyalty comes from providing outstanding services and having great client-firm connections. Customers often continue to be loyal to a company if it serves their needs adequately and with unrivaled qualities. A study in Pakistan's service sector found that SST service quality predicted 59% of users' behavioral intention and 75% of customers' loyalty (Hassan, et al, 2020). The reason for this was that the consumer would feel more independent by doing the service and process himself. Figure 4 from the study illustrates a conceptual framework that explains how each SST component affects customer happiness, loyalty, and behavioral intentions. In other words, when an SST ensures the seven criteria as shown in Figure 4, the likelihood of achieving high customer satisfaction and loyalty increases, and the business may utilize it as a competitive advantage against its rivals.

Figure 4

Conceptual Framework of Customer Satisfaction, Loyalty, and Behavioral Intentions
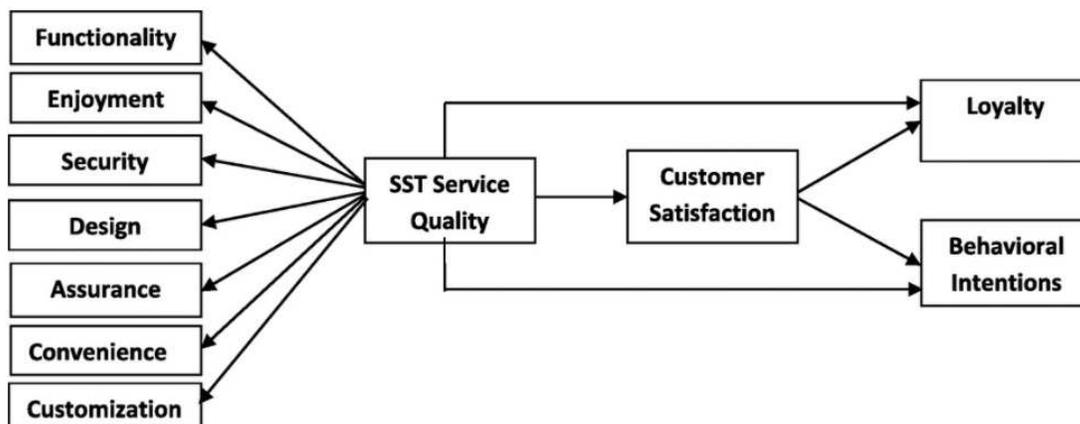
Source: Hassan, et al (2020)

3.2 Management Efficiency and Effectiveness

Efficient management requires making the most of limited resources to produce exceptional achievements in spite of difficult circumstances. To get things done quickly and effectively, you need the skills to do the job properly. To effectively manage a business, you need to do more than just run the day-to-day operations; you need to devise strategic plans to advance the company's objectives. There are several ways in which SST has proven effective for cultivating leadership. Another benefit of the SST approach is its ability to improve management efficiency by enhancing the working environment and reducing workloads, as well as by giving measurable statistics and user data for management assessment.

SST techniques have significantly improved the working environment and obligations of the employees. Employee self-service (ESS) and manager self-service (MSS) technologies are available for HR activities, according to the Society for Human Resource Management (SHRM), allowing employees to request time off, check payroll information, and update 401(k) contributions. These self-service technologies would save labor expenses since most jobs would be finished quickly as opposed to manually, which may take a few hours or days. These self-service technologies also provide users more control over their own actions and give employees a sense of entitlement and authority. According to the 2018–2019 Sierra Cedar HR System, 78% and 68% of respondents, respectively, are presently utilizing ESS and MSS. The organization will increase employee work satisfaction by introducing different ESS and MSS, and operations will run more smoothly as most activities are completed on digital platforms with traceable sources.

Furthermore, by gathering the data in one location, SST also enables more accurate information updating, sorting, and tracking. The importance of information saving in well-organized administration should not be overlooked. Typically, managers organize data to create references. When information is poorly organized, it may sometimes be difficult to obtain this information. Technology techniques for self-service are used to provide correct and updated information without erasure. The technology also stores all the data for retrieval in the future. Understanding the importance of information management in leadership is crucial. In order to make an educated judgment, governance makes references to the prior data in the system. The data is effectively managed by the self-service technology systems and is kept in a single location for convenient access. Since management is aware of when and why the information was captured, it is simpler to follow the most recent data. The ability to track information allows an organization to identify the information's origin and the purpose for which it was provided. Additionally, information tracking reduces concerns in businesses by enabling the accountable parties to locate precise locations in order to make educated selections (Lyons, 2020). A good client experience is often fostered through simple updating, sorting, and tracking via efficient administration.

3.3 Enhanced Financial Performance

The financial performance of a company may be defined as the extent to which it maximizes the return on investment of its assets. Analyzing a company's financial standing is essential for success, as it provides valuable insight into how management can boost productivity and achieve its goals. SST is effective in improving the company's financial standing. It helps the company maintain a strong financial position by lowering labor expenses and increasing return on investment.

SST initially reduces labor costs effectively. A rise in web traffic and a decrease in incoming calls are reported by 45% of businesses that offer online or mobile self-service. 57% of consumers who used SST before contacting the business's customer care team did not receive any assistance. The self-service functionality on the web platform used to deliver SST was either disabled, the client found it too difficult to use, or the solution did not deal with the root of the problem. An efficient SST would be one that could help more clients with the same amount of resources, which would save money by cutting down on staffing needs. A live human query may cost between $6 and $12 per case, but self-service can cost as low as $0.25. The firm's returns are remarkable as a consequence of the superior productivity and high level of customer satisfaction that arises from the delivery of superior services. Return on investment is essential for assessing the firm's efficiency in terms of asset profitability. Implementing an SST approach offers a high return on investment owing to the elimination of complex employment concerns, despite the high initial cost (Destination CRM, 2013).

According to a study by the Aberdeen Group (2018), the effective use of SST may result in an increase in total business revenue and average earnings per client (see Figure 5). The decreased personnel budget enables the company to spend the surplus in other productive departments, therefore enhancing its financial performance. A company may effectively maintain operations and compete with other businesses for profit when it has a strong SST system in place.

Figure 5
Self Service and Financial Performance
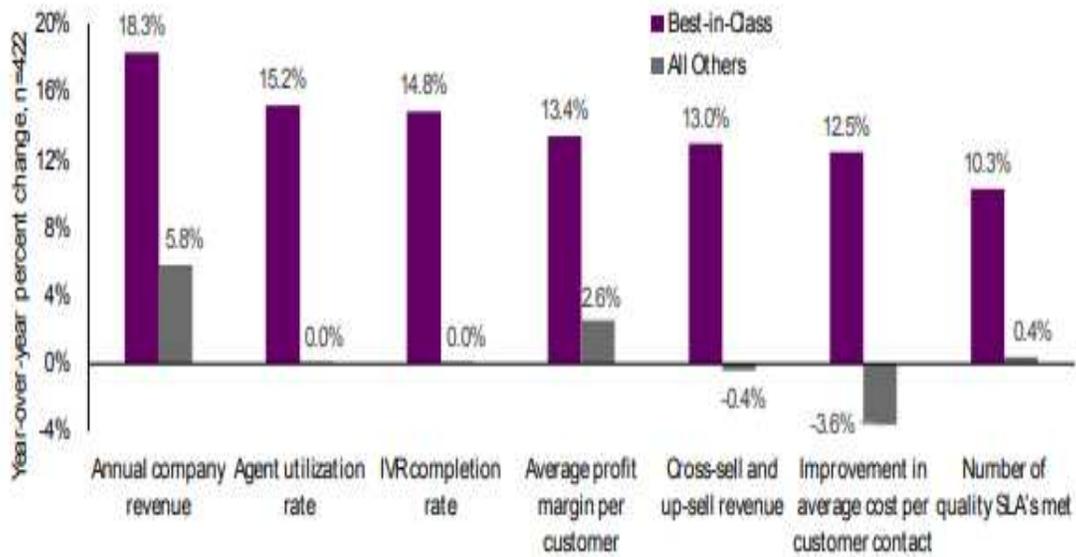
Source: Aberdeen Group, January 2018

Source: Minkara (2018)

4. Challenges of Implementing SST

Despite the real benefits brought about by SST, the implementation of this technology is not without its challenges. This section discusses some of these challenges.
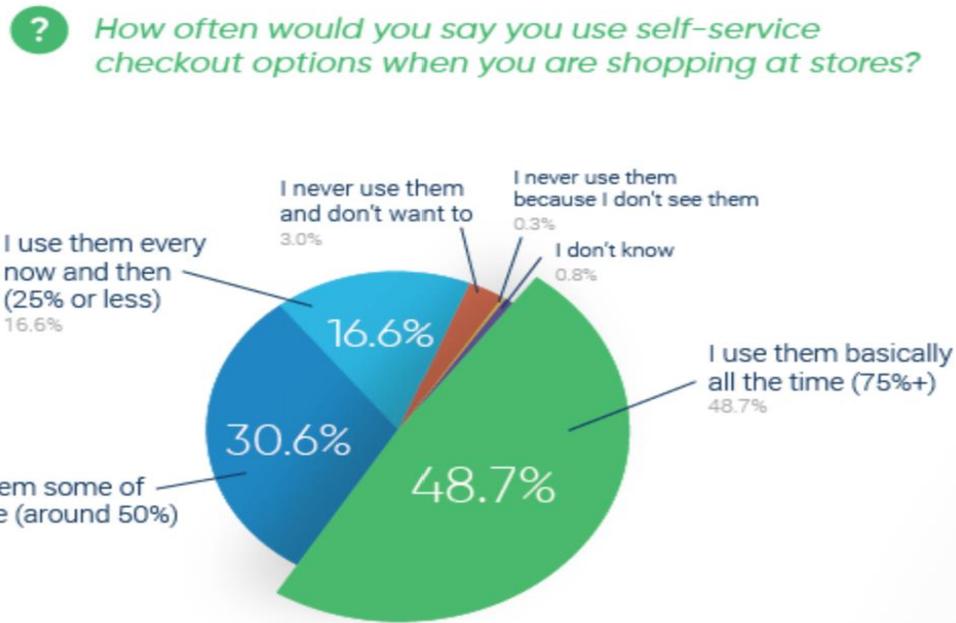
4.1 User Adoption

The amount of user acceptability is a significant hurdle that companies will confront while using SST initiatives. Many individuals, for example, are resistant to change because of the uncertainty that it may bring. Users may avoid using the SST if it has too many barriers to usage, such as an overly complicated user interface. According to a poll conducted in 2021, up to 51.3% of respondents did not feel confident utilizing self-checkout lanes (Figure 6) while up to 65% of grocery store customers who used self-checkout lanes were dissatisfied (Figure 7). The results show a significant gap between human and technological trust difficulties. Dehumanization destroyed the possibility of exchanging real-time client input. Because the human touch is so important in customer experiences, the majority of consumers still prefer help from a checkout worker. People's attachments to the things they are acquainted with also have an impact on how accepting they are of change, as shown by the possibility that some customers can develop an emotional bond with a business that makes them smile and offers them some cheering words.

When gauging success, a business must consider not just the amount of acceptability among consumers, but also the level of acceptance among employees. It is possible that many workers won't agree that SST is preferable to replacing in-person encounters in the workplace. Some workers, for instance, may think that getting their hands dirty while chatting it up with the customer is a great way to foster those all-important personal ties that are so vital to a company's success. A memorandum of agreement signed by management and staff is necessary for these situations if the company is to successfully persuade its customers that the advantages of SST development outweigh the difficulties. Therefore, for a corporation to promote the execution of the SST strategy, it would be necessary to overcome the barrier of influencing the acceptance of the consumers.
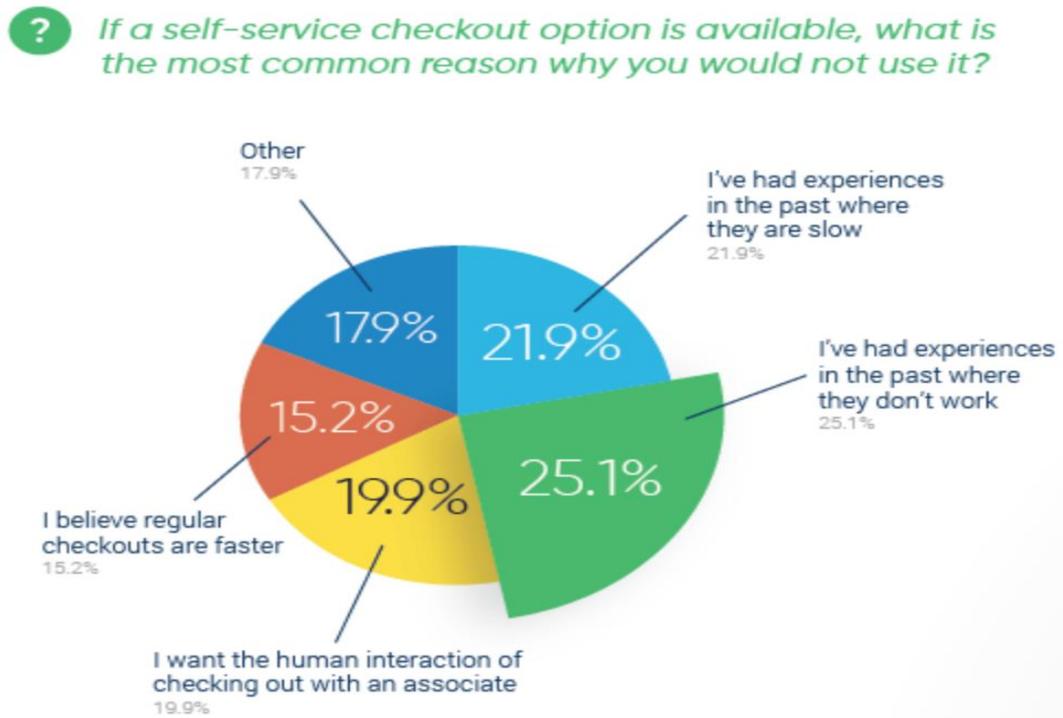
Figure 6

Self-Service Checkout Usage Responses

? How often would you say you use self-service checkout options when you are shopping at stores?

I never use them and don't want to
3.0%

I never use them because I don't see them
0.3%

I use them every now and then (25% or less)
16.6%

I don't know
0.8%

I use them basically all the time (75%+)
48.7%

16.6%

30.6%

48.7%

I use them some of the time (around 50%)
30.6%

Source: Raydiant (2021)

Figure 7
Satisfaction Level with Self-Service Checkout

? If a self-service checkout option is available, what is the most common reason why you would not use it?

Other
17.9%

I've had experiences in the past where they are slow
21.9%

17.9% 21.9%

I've had experiences in the past where they don't work
25.1%

15.2% 19.9% 25.1%

I believe regular checkouts are faster
15.2%

I want the human interaction of checking out with an associate
19.9%

Source: Raydiant (2021)

4.2 System Maturity

A system needs time and money to develop to a point where it can provide the service for which it was designed. Finding a well-developed system that satisfies all the organization's requirements and promotes efficient service delivery is difficult, however. The SST system must be adaptable to any changes that could occur in the fast-paced business environment. Organizations must put a

plan into action to overcome the challenges of system development so that the SST can provide accurate and useful information, maintain current content, and address security concerns.

Since regular updates are necessary for an SST system to be effective, this continues to be a significant barrier to providing the service that customers want most. Because it is a continuing process, there will be continual costs and investments, as well as the potential for a great deal of technical labor and time spent planning the development. In today's fast-paced world, this presents an exciting challenge for a lot of businesses. There are times when more advanced methods are required to fulfill the changing demands of a service. Having a system version that is no longer supported or does not fulfill the requirements of the current generation is pointless. As technological innovations continue to dominate the globe, new features appear and challenges get more complicated, necessitating the technical staff to operate within the dynamic to upgrade the system. It is essential for businesses to provide user-friendly SST and give staff thorough training on the use of SST systems. To improve service delivery and address pressing issues in the business sector, the technical staff must assure frequent upgrades.

Many organizations who are considering adopting the SST also face the difficulty of protecting their client's personal information. Some businesses are hesitant to employ technological service delivery systems because they worry their clients' personal information would be compromised if they completely deploy the system (Ahmed and Zolkipli, 2016). It is important to remember that customers' personal information must be kept secret, as a breach of this trust could be in violation of various data protection legislation, the specifics of which vary by nation. Moreover, as technology develops, cyberbullying and attacks can be launched using private information, discouraging users from using SST services. Therefore, the technological team should create an SST system that can handle the current difficulties and that is well encrypted to reduce intrusions into the firm's information database.

Management must understand how to utilize and interpret SST data if the system is to fulfill its promise of providing useful and timely insights. For instance, SST's sorting feature can be put to use by management to assess client complaints about items and services. Offering a search bar is also essential to facilitating quick user access to the most pressing data. It is possible that the company's performance would suffer if management conducted an investigation and proposed business initiatives that would be insufficient if the SST system was unable to deliver correct information.

4.3 Costly Implementation
Implementing the SST system is the last step in creating a finished piece of software that can give prompt service without employee intervention. It's important to keep in mind that the upfront investment in a virtuous system can be quite high (Considine and Cormican, 2017). SST functionality may be jeopardized, however, if the installation costs are higher than expected when comparing physical customers to personnel service provisions. Because of the increased implementation cost and uncertainty of equivalent returns, many businesses are hesitant to invest in new technology.

Additionally, setting up an SST system needs a substantial upfront expenditure that covers costs for hardware, software, and human resources. Prefabricated self-service system packages rarely come ready to use as-is, but rather require extensive customization to meet the unique requirements of each business. Note that if the SST is poorly designed, the corporation will end up spending more money trying to address the problems it caused. Upgrading the company's existing technology can add extra expenses if its current hardware and software are insufficient to run the necessary systems. Smaller businesses often struggle to secure the necessary funding to adopt the SST approach, while larger businesses may be able to afford the initial costs due to the potential for future savings.

5. Industries affected by SST
The evolution of SST has had an impact on networking services. Companies like Netflix, Facebook, and Amazon are examples of those in the transportation, banking, sales, and entertainment industries. In order to stay ahead of the competition, these businesses must ensure that their systems are both user-friendly and up to date. Constant upgrades are necessary to keep the systems effective and offer the optimum connectivity and user experience for the customers (Haanaes and Fjeldstad, 2016). Companies in this industry compete on a "winner takes all" premise, thus they are all making an effort to provide exceptional service.

Since problem-solving businesses often have to compete with more traditional approaches, they too are feeling the effects of some of the shifts. Online consulting programs in fields like medicine, finance, and engineering all make use of digital resources to improve the quality of their service (Haanaes and Fjeldstad, 2016). Modern technological devices are making an effort to displace skilled workers and lessen the demand for their services. Deloitte, which specializes in audits and taxation, and Baker & McKenzie, which focuses on law and compliance, are only two examples of organizations operating in this market.

6. Managerial Implications

Organizations must overcome the majority, if not all, of the obstacles that lower the standard of customer services or the sustainability-promoting returns in order to attain managerial efficiency. The lack of developed solutions that enhance usability and customer happiness was one of the issues mentioned. With more and more people in SST using the internet, the ease with which a website can be navigated is crucial to retaining existing customers and attracting new ones. Organizations may not have fully developed systems, but they can make changes to their websites to improve service delivery. These changes include making it easier for users to find the information they need, allowing them more agency over their time spent on the site, and using a more user-friendly design for new brands or businesses. The history of the user's interactions with the website is the foundation upon which the loyalty of the user is constructed. Positive recommendations from happy users are another benefit of an intuitive interface. In the same vein as the aforementioned marketing strategy, this one also helps bring in more business. This solution has managerial implications in that SSTs should learn about their most loyal customers' wants and needs and use that information to improve interactions with those consumers. When your clients' requirements are met quickly and effectively, they will spread the news about your business. Furthermore, SSTs should work to enhance the accessibility of their online platforms. It's possible that the websites are less sophisticated, but they're still simple to navigate. Customers can absorb the information on the site and find their way around with ease if it is easy to use. Profits and consumer loyalty both rise as a result.

The low rate of user uptake was also mentioned as a problem. There are a number of factors, such as fear of the unknown and a lack of technical proficiency, that can prevent customers from making the transition to new systems. There are many methods that can be used in web design to simplify the user experience. There shouldn't be any big disruption in service for your regular clients, so make sure your website is mobile-friendly. Furthermore, the site should make use of methods that make it more accessible to people with disabilities, such as the elderly or those with hearing loss (Singh, 2013). The text should be properly formatted to facilitate reading and use of the various features. To keep customers from being inconvenienced, make sure your website works with all of the most popular browsers. The website should load quickly and include robust error handling to make sure it is bug-free. Positive results in terms of customer satisfaction can be expected from the SSTs after these adjustments are implemented. As such, there are a number of takeaways that can be used to ease the transition to SSTs. The first effect will be a reduction in staff size, as less attendants will be needed. In order to run smoothly, you will need a team of people to take care of things like website updates and software management, customer service, and order fulfillment. Although this is a costly adjustment, the money saved on salaries and wages can be put toward improving the system. If funds are tight, it is also possible to implement the system in stages.

7. Limitations & Future Research

The limitations of this study mirror the authors' suggestions for future research. First, more empirical studies should be conducted to determine the factors that affect SST adoption. In particular, future research should examine SST applications in different contexts, environments, and industries, and compare the findings from these areas. Second, there is no doubt that SST will only get better with the advent of powerful technologies such as AI and machine learning. Therefore, future research should dive into how these technologies to see how they could improve self-service and customer satisfaction in different environments.

8. Conclusion

Given the societal and business trends that we are witnessing right now, the global SST market is bound to grow by leaps and bounds. A recent report estimated that the SST market will explode to over $72 billion by the year 2030, growing at a compound rate of more than 11% (Global Newswire, 2022). The development of SST techniques has made many transactions significantly simpler, resulting in timely and speedier service delivery. The management team ought to give careful consideration to both the benefits and the drawbacks of putting into action the SST plan. A greater competitive edge, more effective management, and increased earnings are some of the advantages that can result from implementing SST techniques. Despite this, the SST strategy faces a number of obstacles, the most significant of which are a lack of user adoption and the complexity of establishing such systems. The management team can use the conceptual framework of customer happiness, loyalty, and behavioral intents as an excellent reference to check off items on a checklist and determine whether or not they are ready to implement the SST plan.

Conflicts of Interest: The authors declare no conflict of interest.

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References

[1] Ahmed, H. A. S., & Zolkipli, M. F. B. (2016). Data security issues in cloud computing. *International Journal of Software Engineering and Computer Systems*, *2*(1), 58-65.

[2] Considine, E., & Cormican, K. (2017). The rise of the prosumer: An analysis of self-service technology adoption in a corporate context. *SciKA-Association for Promotion and Dissemination of Scientific Knowledge*, *5*(2), 25-39.

[3] Destination CRM. (2013, July 8). *A new survey highlights the growth of web self-service*. CRM Magazine. https://www.destinationcrm.com/Articles/ReadArticle.aspx?ArticleID=90678.

[4] Distanont, A., & Khongmalai, O. (2020). The role of innovation in creating a competitive advantage. *Kasetsart Journal of Social Sciences*, *41*(1), 15-21.

[5] Globe Newswire (May 3, 2022). Self-Service Technology Market to Touch USD 72.51 Billion by 2030, at a CAGR of 11.27% - Report by Market Research Future (MRFR). https://www.globenewswire.com/en/news-release/2022/05/03/2434187/0/en/Self-Service-Technology-Market-to-Touch-USD-72-51-Billion-by-2030-at-a-CAGR-of-11-27-Report-by-Market-Research-Future-MRFR.html

[6] Grand View Research. (2020, July). *Self-service technology market size report, 2020-2027*. Self-service Technology Market Size Report, 2020-2027. https://www.grandviewresearch.com/industry-analysis/self-service-technology-market.

[7] Haanaes, K., & Fjeldstad, O. (2016). *4 types of businesses where technology is speeding up change*. IMD business school. https://www.imd.org/research-knowledge/articles/which-business-models-are-most-affected-by-digital/.

[8] Hassan-Masood Ul. (2020, June 20). Self-Service Technology Service Quality: Building Loyalty and Intention Through Technology Trust in Pakistani Service Sector. Sage Open, 1-19.

[9] Lyons, K. (2020). How to Improve Employee Experience with Self-Service Technology. https://www.easyvista.com/blog/how-to-improve-employee-experience-with-self-service-technology

[10] Minkara, O. (2018, January). *Self-Service: Create Happy Customers & Reduce Costs*. https://astea.com/wp-content/uploads/2018/08/Self-Service-Create-Happy-Customers-Reduce-Costs.pdf.

[11] Raydiant. (2021, February 19). *The state of self-service checkouts*. https://www.raydiant.com/blog/state-of-self-service-checkouts/.

[12] RBR Press Release. (2021, July 5). *Self-checkout revolution ramps up with record levels of investment*. https://www.rbrlondon.com/wp-content/uploads/2021/07/SCO_Press_Release_050721.pdf.

[13] Safaeimanesh, F., Kılıç, H., Alipour, H., & Safaeimanesh, S. (2021). Self-Service Technologies (SSTs)—The Next Frontier in Service Excellence: Implications for Tourism Industry. *Sustainability*, *13*(5), 2604. doi:10.3390/su13052604

[14] Wang, et al. (2022, August). An Investigation of Self-Service Technology Usage during the COVID-19 Pandemic: The Changing Perceptions of 'Self' and 'Technologies'. Technology in Society, 70, 1-11.

[15] Zielinski, D. (2019, August 16). *Self-service technology brings benefits and concerns*. https://www.shrm.org/resourcesandtools/hr-topics/technology/pages/self-service-technology-brings-benefits-and-concerns.aspx.