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Will Self-Service Technologies Be Widely Adopted in Travel, Tourism, and Hospitality Industries During and after COVID-19?

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ABSTRACT

Travel, Tourism, and Hospitality (TTH) sectors had been believed to continue experiencing constant growth before the unexpected COVID-19 outbreak. Although the Severe Acute Respiratory Syndrome (SARS) and Middle-East respiratory syndrome (MERS) outbreak had occurred before, COVID-19 is causing a vast number of fatalities and raised social and economic issues in many countries. TTH sectors were under heavy pressure compared to other industries during COVID-19. This article aims to systematically review the critical role of SSTs to be adopted in the TTH companies during and after COVID-19. How business transformation is possible in the TTH companies will also be discussed. For that purpose, this study carried out a meta-analysis from previous studies. The results revealed TTH companies must re-shape business strategy by adopting and adjusting service delivery using Self-Service Technologies (SSTs) to stay competitive and survive tough times. TTH ecosystem needs to employ Augmented reality, Virtual reality, Blockchain, Robot, and Autonomous Service which have become a reality today and become a necessity for many industries in the future. The originality or novelty of this research is that this research contributes to the body of knowledge by elaborating on how TTH sectors will adopt SSTs.

1. INTRODUCTION

The leisure and hospitality industry are some sectors that has been hit particularly hard by COVID-19, and we can see that many people cannot even go to the hotel now, either to the restaurant. There is a question that arises about the future of this sector. COVID-19 is an unprecedented event; the company has to adapt and adjust its business strategy to support its health. Re-shaping business strategy is critical to building customer trust. Company procedures must pay attention to physical safety and cleanliness. From the perspective of innovation and digitization, more and more TTH sectors will be encouraged to digitize, such as online bookings, entry reservations at restaurants, hotels, airlines, entertainment, and tourist attractions. These SSTs will be increasingly used and evolving in teaching new ways customers interact with companies during unprecedented times of pandemic.

Self-service technology (SST) is a term used to describe technological interfaces that allow consumers to produce a service independent of direct service employee involvement [1]. SSTs offer a wide variety of services in the journey of traveler that is implemented into TTH service encounters, such as reservations (pre-purchase), interaction at the destination (purchase), and the experience post-holiday (post-purchase) [2]. TTH companies have launched SSTs with the aims to enhance productivity, proficiency, and effectiveness in the service process. Self-service technologies (SSTs) have long been applied to the context of the banking and retailing industry [3-7], that are also a promising innovation to be applied to the TTH sectors [8-11]. SSTs can provide convenient services to their customers in attaining better productivity and satisfaction [12, 13]. In a pandemic disaster condition, SSTs are an attractive investment for many business owners of TTH sectors. Many studies have looked at Technology Acceptance Models in various contexts, but few studies have linked it to disasters, such as the COVID-19 pandemic. SSTs have been a topic of great interest to researchers since the late 20th century and is becoming more challenging with the increasing level of uncertainty in the 21st century.

Will Self-Service Technologies be Widely Adopted in Travel, Tourism, and Hospitality Industries During and After COVID-19? This question has become a hot topic with the emergence of the unexpected COVID-19 disaster that all humanity did not expect. For many developed countries supported by advances in research and technological development, this may not be a big issue. Conversely, for developing countries with a culture of low technology acceptance and limited technological literacy, this becomes a hot topic of debate. SSTs provide convenient service to the customer without direct contact between the buyer and supplier of services [1, 14]. It allows buyers to generate and utilize the services without direct interaction with the service organization [15]. Some SSTs, such as ATM, online banking, mobile banking, and self-check-in machines at airports, online shopping, online bill payment, etc. are popular amongst the customers.

This study aims to investigate the role of SSTs to be adopted in TTH sectors during and after the COVID-19 pandemic. Previous studies conducted by Feng et al. [16] found that some companies (e.g., airlines) considered replacing their service

employees completely with SSTs for cost efficiency and effectiveness. People are being forced to improvise and learn new habits due to COVID-19, there is a gap to observe consumer behavior caused by circumstances being forced to adopt SSTs widely in the context of the TTH industry [17]. It is predicted that consumers in the future will be familiar with new procedures for how to shop and buy products and services [11]. TTH sectors were under heavy pressure compared to other industries during COVID-19. TTH companies must re-shape business strategy by adopting and adjusting service delivery using Self-Service Technologies (SSTs) to stay competitive and survive tough times. This article will review the critical role of SSTs to be adopted in the TTH companies during and after COVID-19. How business transformation is possible in the TTH companies will also be discussed. For that purpose, this study carried out a meta-analysis from previous studies to identify the Self-Service Technologies (SSTs) in TTH industry.

2. PROSPECTS IN ADOPTING SSTS IN THE SERVICE ECO-SYSTEM DURING AND AFTER COVID-19

In a problematic situation, during the COVID-19 pandemic, people are faced with new ways of traveling, spending leisure time, or entertainment. This original method is known as the 'new normal.' New normal or post-pandemic conditions will change traveler behavior in the tourism sector, particularly in implementing health protocols [18]. Some of the procedures, such as tightening hygiene and health at airports and airplanes before taking off, implementing self-check-in and self-service systems for hotel and restaurant visitors, while paying attention to hygiene. The COVID-19 outbreak will accelerate digital transformation in various sectors of TTH. SST can be an engine of innovation in service creation and delivery [19, 20].

There is some significant potential that companies can acquire if they adopt SSTs into their business operations. First, they can encourage customers to fulfill the role of being 'service employees' indirectly, and their interactions in the service process will determine the result of the overall process [21]. Second, reducing employees in technical or repetitive work can save company operating costs [21]. Meuter et al. [1] stated that the eco-system SSTs transforming humans into machines could save time and costs, have high flexibility, greater control over service delivery, the convenience of location, and increased perceived customization. Third, companies can concentrate more on other aspects than technical and repetitive work to parts where human touch becomes crucial to the customer. Fourth, SSTs provide an opportunity to extend customer - company experience contact through SSTs from the pre-purchase to post-purchase stages [22]. Consumers will provide personal data to the company through a digital interface in the early stages of the purchasing process. SSTs then process the information obtained from customers to become sources of large-scale databases to know customers' personal needs in the future and adjust the company's services to address those needs [23]. Local authorities can also use the information provided in developing sustainable destination strategies [24]. TTH companies can analyze traveler behavior by observing their online transaction and ordering activity [25]. Fifth, the innovative SST implementation also contributes to the provider's overall image as the leader company in e-services [26]. Meuter et al. [1] also stated that SSTs could benefit organizations in cost efficiency, increasing customer satisfaction and loyalty, and reaching new customer segments. TTH companies can reap all of these potential benefits if they adopt SSTs in their business operations.

SSTs offer potential benefits not only for companies but also for users. The advantages of SSTs include both extrinsic and intrinsic benefits. Extrinsic services that can be obtained by users or tourists include SSTs provide non-stop services 24 hours a day, seven days a week, to reduce customer efforts to access company services [27]. The user's active involvement in the entire service process will determine satisfaction and dissatisfaction with the company [28]. The use of SSTs can reduce operational costs to offer lower prices to users, leading to higher customer satisfaction and loyalty. SSTs can also make the processes that customers need to go through more comfortable and more straightforward, reducing the level of stress and complexity in the service meeting process [29]. SSTs also make it easy for persons with disabilities to access company services. It also offers many advantages for travelers because information kiosks and other service kiosks are available in many languages, helping tourists access a variety of information [30].

Apart from extrinsic benefits, SSTs also provide intrinsic benefits to users. The inherent benefits that can be obtained include: 1) independence and enjoyment [1, 31], 2) ease of control and convenience for users, at a lower price [32], 3) some users even mention that they feel comfortable using SSTs compared to making personal contact with service employees [26, 31].

3. CHALLENGES IN ADOPTING SSTS IN THE SERVICE ECOSYSTEM DURING AND AFTER COVID-19

Several challenges also arise in adopting SSTs in the eco-system of services in the TTH industry. The adoption of SSTs in the company's business model can lead to high initial costs, especially for the cost of training employees and customers in using SSTs [33]. In addition, it's also cannot fully replace the human touch in the service encounter process. During and post COVID-19, there were significant challenges that the TTH industry needed to anticipate. The business concept of the TTH industry must adapt to 'the new normal' of traveler behavior. Hygiene, domestic travel, local tourism, contactless travel, and digital traveling are becoming a necessity for tourists. These will also have implications for the higher demands on service employees' skill set, competence, and expertise. TTH businesses may also need to change their customer relationship strategy and adapt it to machine-customer encounters [8, 34-36]. For TTH companies, reduced employee-customer contact makes early detection of service failures difficult, so companies must regularly enhance and improve service systems [21]. In addition, the direct job losses associated with implementing SST can affect the corporate and destination image if the transition is not communicated positively by the company [30]. SSTs cause employees' technical skill requirements and repetitive jobs to be significantly reduced, which will present new challenges for reorganizing the workforce requirements. Joint efforts across industry, government, educational institutions, and civil society are urgently needed to mitigate the negative impacts.

In addition, other challenges arise for companies if

customers do not adequately utilize SSTs. Companies may incur more costs if the technology adopted is not used effectively by customers due to increased costs of maintaining operational staff while new technology increases [21]. To overcome this, companies need to educate customers about their role in the co-production of services, make them run well and smoothly, and motivate them to do so [14].

Challenges are not only faced by companies but also by SSTs users. The user will refuse to use SSTs if he does not feel any significant benefit from using them [37]. In the concept of technology adoption model, perceived usefulness and ease of use are a must in technological literacy [38]. If the user does not feel the ease of use, the probability of switching will be high [39]. SSTs require users' active participation and a higher allocation of responsibility for them in their use, which causes various negative psychologies to be perceived by users, such as anxiety [14] or shame [37]. For experienced users, this problem can be anticipated by the company, but for the user. Still, for low education level, inexperience, and reluctance to learn, this has become a big problem for companies because it can increase customers' negative emotions about using SSTs [40]. Anxiety and stress are experienced by customers who are uncomfortable using them [1]. If they get a negative feeling, they will see service encounters as social experiences and prefer to deal with people [1]. The high failure rate associated with SST is still a drawback for customer SSTs usage [13, 37, 40]. Users may also perceive that service failure that results from using SSTs only result in helplessness and resignation from them in dealing with it because the production process and service results are very much determined by themselves. This feeling of abandonment causes high resistance from the user.

In addition, there are other challenges perceived by users in adopting SSTs, namely regarding threats to privacy, security, misuse of data, and fraud [14]. Technologies underpinning seamless customer journeys will include data-sharing platforms that enable collaboration between companies. A safety issue is a necessity that TTH companies must anticipate to increase comfort and increase users' positive psychology. Eco-system in SSTs should enable users' data to be exchanged safely and securely [14].

4. IMPLEMENTING SUCCESSFUL SSTS IN UNPRECEDENTED TIMES DURING COVID-19

The majority of rapidly adopting new technology are millennials [13, 41]. Lee and Lyu [13] tried to investigate the factors that can motivate older people to adopt SSTs. They found an impressive result that technological innovativeness was not identified as a crucial factor in SSTs adoption for older people. Lee and Lyu [13] conclude that perceptions of SST characteristics become the critical determinants of older consumers' intention to use SSTs through service quality or perceived risk. Other research found that creating customer trust while enhancing customer experience is the key to success for the TTH sector during and after COVID-19 [42]. Various safety, health, and hygiene protocols should always be encouraged and maintained in every aspect of the customer service encounter. Self-service technologies will be successfully implemented in the company to overcome the various inhibiting factors in technology adoption. The role of consumers in creating value co-creation can be improved [10, 13, 17, 21].

The COVID-19 pandemic and the lockdown and social distancing have changed consumers' shopping habits and traveling [17]. Consumers are forced to change old habits and learn new practices. Sheth [17] questions whether the new way people adapt will change their shopping and traveling habits, from previously shopping at the shopping centers and attending concerts and sports events become a hassle. Therefore, they consider that it is better to let the store or the event come to the home. In line with the new normal traveling trends, there is a dynamically growing demand for the destination's safety, health, and cleanliness. Consumers will expect personalized solutions that answer their individual needs to get access to detailed information [43]. Database, artificial intelligence, machine learning, and service automation the critical point to increase traveler experience in the overall service process.

Maximizing the value of digitalization in the TTH sector is essential for the successful acceptance of SSTs widely. It will require collaborative action from industry leaders, regulators, and policymakers [44]. The revolution of digital technology has opened the door for the real-life implementation of shared economy theories [43]. The success of SSTs implementation during and a post-COVID-19 pandemic depend on communication strategy. People like to be informed about every change in policy, regulation, and many about the destination and place they want to visit. With lockdown in place and call center lines choked, customers used the digital tools heavily. The use of bots doubled during the lockdown and allowed customers to remain connected in challenging times.

5. SCOPE OF FUTURE TTH SERVICES

COVID-19 disaster has awakened many TTH companies to include risk and disaster management protocols in their business ecosystem. The future of TTH services will integrate IoT and RAISA into SSTs to further enhance the customer experience in using the system. AI-Based SSTs are one of the topics that will be widely researched in the future because AI-Based SSTs offer more capabilities compared to conventional SSTs [45]. Chen et al. [45] mentioned that AI-Based SSTs could provide 24/7 self-service consultation, self-check, self-service handling, self-service pickup, and more. With embedded tools, such as a suction ID card reader, QR code scanner, a high-resolution camera, a live binocular camera embedded in AI-based self-service machines, users are also allowed to self-print documents like a ticket, e-billing, and more. Thus, they may find it more efficient to engage in business transactions with companies [45]. Chen et al. [45] also highlight the fundamental differences between conventional SSTs and AI-Based SSTs (Table 1).

AI-Based SSTs have become a flexible go-to tool for service innovations. TTH companies who fail to adopt easy technology-enabled applications will be left behind. In the digital platform tourism business strategy, consumers serve as company partners during service encounter processes that can best be defined as a postmodern business model [43]. In the future, technology will continue to experience development. The TTH business must prepare itself to face bigger challenges in the future. In future tourism, new consumers will give birth to new priorities and demands. With the emergence of the COVID-19 pandemic, tourism business archetypes have been forced to occupy the online tourism space. Future studies can

also focus on filling novel contributions to studying the archetype and business landscape of travel, tourism, and hospitality in virtual reality. Augmented reality, Virtual reality, Blockchain, Robot, and Autonomous Service have become a reality today and become a necessity for many industries in the future. Bitcoin and other cryptocurrencies have led to the creation of new payment systems in various businesses capable of tracking user payment transactions, preventing forgery, or altering data. In addition, the entire transaction only takes a few minutes instead of a few normal business days. These solutions can mean revolutionary and innovative payment options for everyone in the tourism industry. This payment system is believed to be a payment eco-system that is widely used in the future. Blockchain offers a new level of encryption security and intervention-free operation, and data handled in the system cannot be modified in any way. Another great benefit of this system is that transactions are carried out without intermediary agents, thus eliminating additional transaction costs [43].

Table 1. Fundamental differences between conventional SSTs and AI-based SSTs

Attribute	Conventional SSTs	AI-Based SSTs
Space	Physical	Bridging physical and digital
Core technology	Button	Natural language processing, face recognition, recommendation algorithm
Nature of interactivity	User to machine	User to machine Machine to machine (touchpoint to touchpoint) User to user User to companies
Nature of experience	Offline experience	New personalized and seamless user experience
Service provision	Fixed service	Always-on and always-responsive services

Source: [45]

6. CONCLUSIONS

The results revealed TTH companies must re-shape business strategy by adopting and adjusting service delivery using Self-Service Technologies (SSTs) to stay competitive and survive tough times. TTH ecosystem needs to employ Augmented reality, Virtual reality, Blockchain, Robot, and Autonomous Service which have become a reality today and become a necessity for many industries in the future.

Theoretically, this study aims to provide some insight into the TTH sector topics that can guide management researchers in the near future. The main research trends in the TTH sector briefly reviewed here are expected to assist in future research efforts. Many parts that have not been reviewed from the TTH sector create opportunities to fill gaps for further research, mainly due to changes in the business ecosystem resulting from COVID-19. Studies on consumer acceptance of future technology also need to be improved, especially those investigating the virtual realm in bridging real reality. Augmented reality, virtual reality, blockchain, robot, and autonomous service will be hot topics for decades to come, as these areas of research bring new ways for consumers to interact with companies. Future researchers can also include risk and disaster mitigation protocols in the TTH business model. Researchers in the TTH sector also receive criticism for the lack of relevance of practice in solving real problems and emphasizing theoretical and empirical issues. Future researchers can also collaborate with practitioners in the TTH field to develop applicable research models in the future.

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