Factors Impacting User Behavioural Intention to Adopt Self-Service Technology: An Empirical Study

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Abstract

Self-service technologies are gateways that allow clients to use services, which are efficiently provided without the assistance of service employees. Self-service technology has become prominent in many businesses, especially multichannel retailing, and it has fundamentally altered the service aspect by shifting the ordinary 'customer-employee' perspective to the modern 'customer-technology' encounter. This study aims to identify the factors which determine the impact of self-service technology on users' behavioural intention to adopt self-service technologies by examining the effects of performance expectancy, effort expectancy, trust, security and privacy, satisfaction, facilitating conditions and customisation and functionality on user behavioural intention to adopt self-service technology. This study also aims to integrate the developed UTAUT2 model into SST and Saudi Arabia's retail industry. This study used a quantitative approach with an online google form survey to collect the data from 329 users of self-service technology in Saudi Arabia. The results showed that these factors significantly, positively and directly affect user intention to adopt self-service technology. The findings are expected to help researchers, retailers, and consumers make sustainable decisions in adopting and using SST. The results also identified specific suggestions which potentially benefit retail businesses to use further services to attract customers in the long run.

Disciplinary: Information Technology.

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1 Introduction

With the current tremendously growing advancements in information technology (IT) and information systems (IS), businesses have become more open to numerous possibilities for substituting or augmenting the concept of individual delivery of services with advanced self-service technologies (SSTs). Many existing innovations have greatly assisted customers in making choices, either as a primary goal or as a by-product. Self-scanning, for instance, permits consumers to test product content by scanning the barcode, whereby the primary goal of this software is to improve checkout effectiveness. On the other hand, other technology solutions are primarily concerned with increasing effectiveness without offering significant decision support, such as self-checkout (Considine & Cormican, 2017).

Investing in these technologies pays off when consumers opt to use it when the innovation offers a favourable consumer perspective, resulting in gratification with the innovation and spreading this satisfaction to the firm. Previous studies focused on several hypotheses that clarified IT acceptance. The SST analysis has, therefore, focused on the determinants which influence the preliminary acceptance of technology (Scherer et al., 2015). Accordingly, limited research has been done about IS and SST regarding the post-use behaviour of users. Research has shown the importance of customer fulfilment as a reliable indicator of IT retention. However, customers' gratification has not been clarified. This is especially true for the consumer's in-store knowledge of technology and the potential ripple effects from contentment with the innovation to gratification with the vendor (Ballantyne & Nilsson, 2017).

SST has been gaining considerable attention and popularity in many industries and can revolutionise almost every facet of the service encounter. SST use has been proven in many previous studies to increase contentment, trustworthiness, and commitment. According to Jeon et al. (2020), the directed use of self-service technology by certain service providers and improved e-service quality have resulted in SST-consumer commitment. Nevertheless, research is limited on the effect of SST use on user satisfaction, and consumers have established SST use via word-of-mouth and cross-purchase. Moreover, consumer commitment has been influenced by how SST e-service performs. The criteria's impact on customers' choices for unique smart gadgets may be deduced. Also, observing functionality is crucial in comprehending the link between technological experience and happiness in retail or service situations.

Furthermore, trust is a critical problem for merchants because it is one of the most prevalent consumer grievances, in addition to the users' behaviours and customers' willingness to use SST services (Djelassi et al., 2018). This study mainly aims to identify the factors which determine the impact of self-service technology (SST) on users' behavioural intention to adopt SST by examining the effects of performance expectancy, effort expectancy, trust, security and privacy, satisfaction, facilitating conditions and customisation and functionality on user behavioural intention to adopt self-service technology in the context of Saudi Arabia. This study aims to integrate the developed

UTAUT2 model into SST and Saudi Arabia's retail industry. Figure 1 illustrates the Proposed Model of this Study.
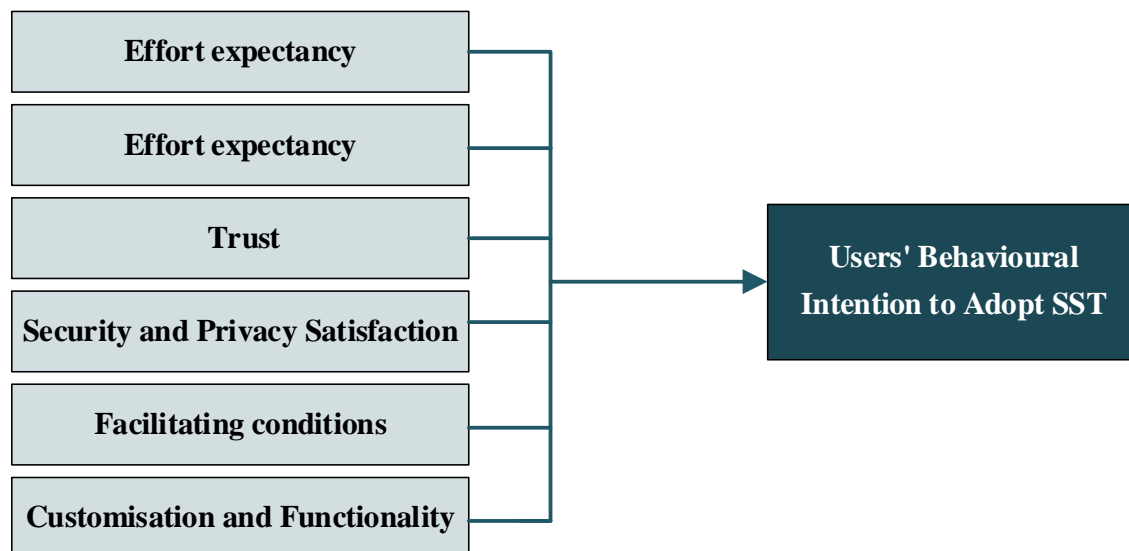

Figure 1: Proposed Model of the Study

2 Literature Review

Self-service technologies (SSTs) in a service delivery process play a key role in decreasing delivery time and enhancing delivery services. SSTs have been proposed as an efficient approach to shorten wait times and enhance customer contentment. Studies emphasised the significance of SST effectiveness and reliability. SSTs have evolved as a crucial feature in services, such as the banking sector in the developing world. Through SSTs, banks can take advantage of economies of scale, thereby providing clients with simple access to financial services. Based on the literature, SST use resulted in increased vulnerability to a facility, and technology adoption influenced the buyers' behavioural intentions. Retailing aims to encourage consumers to cross-purchase other items not part of the consumer's portfolio. Additionally, in today's increasingly linked environment driven by social media use, 'word-of-mouth' is critical for providing services, such as SST services. Similarly, service quality is critical for SST-dependent services to generate value in business.

In the same vein, boosting the productivity of employees and staff retention are priorities within the tourism sector, particularly among the subgroup of tourism and hospitality organisations that place a significant focus on 'people first' approaches (Page et al., 2018). According to Ahn and Seo (2018), an increasing number of restaurant owners regard themselves as "close followers" in innovation acceptance, and more than half of restaurant owners expect to enhance or sustain current technology expenditures. From another perspective, Sharma et al. (2021) examined and argued that self-Service Technologies (SSTs) are pervasive features in sophisticated customers' daily lives, providing service in retail organisations and featuring brand-new methods to involve and inspire individuals while reducing costs. Park et al. (2021) stated that understanding how consumers perceive SST and improving its standard is essential for experts and professionals alike. Schweitzer and Simon (2021) concluded that the revolutionary emergence of self-service retail technology (SSRT), that is, technical connectivity that empowers consumers in

retail settings to yield a service distinct from direct-service employees' participation, drastically altered retail environments. The study presented an SSRT dilemmas perspective, building on the psychological theory of self-determination, which combines the self-construals to tackle many elements that users of SSRT join to achieve authority compared to their surroundings. (Van de Sanden et al., 2022) argued that modern retail outlets are progressively supplemented with interacting and innovative technology to provide consumers with an enriching, unique retail experience. The purpose of the analysis is to investigate the influence of consumers' motive attributions or different reasons people might attribute to a retailer for integrating interactive kiosks within the shop on their expectations of innovation and utilisation plans. This analysis reveals a connection between self and customer-serving motivation attributions, what consumers anticipate from a collaborative shop, and their intent to utilise it.

The UTAUT's practical significance within the SST's framework has been assessed. The results showed that, when contrasted to UTAUT, the extensions postulated in UTAUT2 yielded a significantly improved performance in the variation described by performance expectancy and technology use. It is perhaps worth mentioning that diverse conceptual models were constructed to forecast the deployment and use of technology, whereby UTAUT represents a model proposed to anticipate technology acceptance in an organisational context. The Unified Theory of Acceptance and Use of Technology was enhanced by incorporating major frameworks of eight prevailing frameworks ranging from human psychology to computer science. The UTAUT2 paradigm, therefore, aims to consolidate three frameworks: hedonistic drive, pricing worth, and routine. Personal discrepancies, e.g., user's name, maturity level, sexual identity, and skill set, are thought to normalise the impacts of these concepts on users' behavioural intentions and innovation use. Therefore, a robust forecasting model of UTAUT2 has substantiated the conceptual foundation, which is constructed based on TAM and UTAUT2.

Demoulin and Djelassi (2016) asserted that businesses implement self-service technologies (SSTs) to increase efficiency while improving consumer contentment by providing new and accessible service channels. The authors tested a complete framework encompassing the personal, systemic, and contextual factors of consumers' actual use of SSTs. SSTs can be referred to as technology gateways that allow clients to use services provided without the assistance of service employees. Wang et al. (2012) argued that the emergence of SSTs has significantly altered how service organisations engage with consumers. The researchers investigated the indirect impact on the consumer's decision between self-service and personal assistance. Their study examined the impact of previous experiences on self-service technology's behavioural attitudes and how focused products and merchandise encounters affected the SST users' attitudes and behaviour. However, the bulk of the SST research has concentrated on consumers in mature markets, whereby recent studies have contributed to expanding knowledge on SST in the framework of developing economies. Self-service technology has become a key component of shoppers' everyday shopping routines. People have noticeably embraced this technology across many countries worldwide,

whereby this rocketing shopping pattern is expected to grow universally. Therefore, as SSTs have become a more general service provision, it is essential to investigate the implications of SST service excellence on consumer experience, commitment, and behavioural intentions.

2.1 Attributes of Self-Service Technology

2.1.1 Performance Expectancy and Effort Expectancy

Innovation and personal characteristics attracted the attention of the SST use studies. Innovation characteristics, such as performance expectancy and effort expectancy, determine the attitude and technology use, whereas other factors affect only technology acceptance via the determinants mentioned above (Venkatesh & Davis, 2000). Previous studies in many industries have confirmed some relationships between technology adoption, usage intention, performance expectancy, and effort expectancy of SSTs (Hsu et al., 2021; Sedighimanesh et al., 2017). Similarly, customer-effort expectancy SST was found to enhance customer attitudes toward self-service technology (Chen et al., 2021). In another study, Taufik and Hanafiah (2019) emphasised that performance and effort expectancy are positively associated with users' attitudes toward SST use. Consequently, the users' experience using the SST service is vital as it affects their purchasing behaviours and attitudes.

2.1.2 Trust

According to Gefen et al. (2003), trust must be an essential predictive variable when trade scenarios incorporate social uncertainty and risk. The supplier or the technology might be blamed for the lack of trust. According to Grabner-Kräuter and Faullant (2008), technology confidence derives from interpersonal connections and technological systems. According to Seo (2020), the UTAUT2 model's seven characteristics and trust exert a significant direct/indirect effect on the consumers' behaviour toward using the QSR kiosks (Quick Service Restaurants). Trust reduces uncertainty by creating positive attitudes and providing satisfactory expectations for those transactions.

2.1.3 Security and Privacy

They are described as a philosophical export between costs and benefits that significantly influences the consumer's behaviour. Such perceptions were investigated in many previous studies. Research has shown that security and privacy concepts can be construed in "economic terms" rather than absolute terms. For example, it has been argued that customers would likewise provide and expose their personal information to businesses, and they would undertake a risk-benefit analysis to evaluate whatever outcomes they would obtain in return (Li et al., 2010). Even though the primary concentrate on overall security and privacy considerations, initial evidence indicated that these concerns might not be sufficient to explain security and privacy-related behaviour in a particular transaction. Several scholars emphasised the importance of taking transactional security and privacy concerns into account when explaining individuals' security and privacy trade-off, which is primarily transactional (Choi & Land, 2016).

2.1.4 Satisfaction

Individual expectations and evaluations after consumption are referred to as satisfaction. Businesses must understand their customers' expectations before the shopping experience because satisfaction is a personal preference (Yu et al., 2014). In a study on customer satisfaction, Miranda Veloso et al. (2017) conducted an online survey to investigate Portuguese retail sales and found that customers' perceived value and the quality of service significantly influenced customer satisfaction. Users' expectations of customer satisfaction and the experience value of self-service retail stores were evaluated to determine whether customer satisfaction plays a crucial role in the development of major self-service retailers. For example, if consumers are happy with the SST performance based on the components of the service that they consider necessary, these customers will be more satisfied.

2.1.5 Facilitating Conditions

Several studies have shown that facilitating conditions are essential to consumer behaviours toward technology use. Venkatesh et al. (2012) demonstrated that facilitating conditions could be used in the adoption literature to predict behaviour and intention because they reflect a person's values. Moreover, Ahn and Seo (2018) found that consumers' proclivity for gadgets influences their reactions to interactive SSTs in their daily situations. Consumers with a stronger tendency for gadgets, according to the findings, have a significant influence on their behaviour and attitudes when it comes to SSTs. Customers' perceptions of value were significantly and positively influenced by effort and performance expectations, with performance expectancy having a significant effect. Moreover, facilitating conditions, social influence, and perceived value were significant predictors of SST in performance expectancy and behavioural intention regarding SST adoption and use (El-Said & Al Tall, 2020).

2.1.6 Customisation and Functionality

The term 'functionality' comes from the Latin function, which means to perform a function for users. The functionality of SSTs as performance focused on the dependability and accuracy of tasks. Meuter et al. (2000) proposed a similar concept to influence customer satisfaction as it "did its job." Customers become repeat users and feel satisfied after experiencing the convenience of using technology. When SSTs functionality was operational and used, client satisfaction was achieved in banking services and airports.

3 Method

This study used a quantitative research method. An online google-form survey was implemented to elucidate the respondents' perceptions toward SST use and its effectiveness in purchase transactions. The sample of the study included 329 Saudi users of self-service technology. The main objective involved examining the factors determining the impact of self-service technology (SST) on users' behavioural intention in the adoption of self-service technologies. The primary data of this empirical study was collected using the convenience sampling method. Convenience sampling approaches are classified as non-probability sampling techniques and are

the most successful data collection methods (Tongco, 2007). When time or other considerations surpass generalizability, non-probability sampling is used (Sekaran & Bougie, 2016). Because there is not a list of Saudi Arabian users of SST in the retail industry, non-probability sampling was employed for this study. This study employed exploratory factor analysis and Multiple regression for statistical data analysis.

4   Data Analysis and Findings

Table 1 shows the survey respondents' profiles. The population sample included respondents 61.7% males and 38.3% female. A proportion of 29.5% of the survey respondents belongs to an identified age group between 28 and 35 years old, while 49.5% of them belong to the age group between 35 and 41 years old. Other respondents at 21.0% are above 41 years old. Moreover, 31.3% comprises graduate and postgraduate university students, whereas 45.9% of the respondents hold professional diplomas and 22.8% hold other academic qualifications. Furthermore, 31.3% of these respondents receive monthly salaries, while 26.4% work in the country's business sector, and 29.8% of the respondents are housewives, whereas 12.5% work in different occupational sectors in Saudi Arabia. Also, a percentage of 57.4% of the respondents always use the SST of different companies, while 32.8% of them rarely use the self-service technology when purchasing goods and services; however, a proportion of 9.7% of the respondents never use SST.

Table 1: Profile of survey respondents

Variable	No. of Respondents	Percentage
Gender		
Male	203	61.7
Female	126	38.3
Total	329	100
Age profile		
28-35 years old	97	29.5
35-41 years old	163	49.5
Above 41 years old	69	21.0
Total	329	100
Education		
Graduates and postgraduates	103	31.3
Professional degrees	151	45.9
Others	75	22.8
Total	329	100
Occupation		
Salaried	103	31.3
Business	87	26.4
Housewife	98	29.8
Others	41	12.5
Total	329	100
Frequency of SST use		
Always	189	57.4
Rarely	108	32.8
Never	32	9.7
Total	329	100

## 4.1 Exploratory Factor Analysis

EFA is a technique based on correlation, which puts together the highlight-correlated variables (manifest) in the form of constructs (latent) and makes the data fit for establishing causal relationships. The factor structure among 32 items related to independent variables was

determined by using exploratory factor analysis, i.e., Varimax rotation. Moreover, the Kaiser-Meyer-Olkin sample adequacy measure recorded 0.883, that is, higher than the recommended value of 0.6, and Bartlett's sphericity test was significant at (χ2 (703) = 4127.492, p <0.05) 6 (Kim & Mueller, 1978), which approved the sample adequacy for the Exploratory Factor Analysis (EFA). In this study, the entire preliminary communalities were higher than the threshold, and the factors loading was higher than 0.5. The EFA results for the 32 items extracted seven components with the Eigenvalues higher than 1.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.873
Bartlett's Test of Sphericity	Approx. Chi-Square	4127.492
	df	153
	Sig.	.000

In this study, KMO and Bartlett's Test has been applied, as shown in Table 2 and the KMO value was 0.873, that is, higher than 0.6, which is the recommended value (Kim & Mueller, 1978), confirming the factor analysis validity, which approved the sample adequacy for the EFA. Bartlett's Test of Sphericity showed a significant result; therefore, the data were appropriate for EFA.
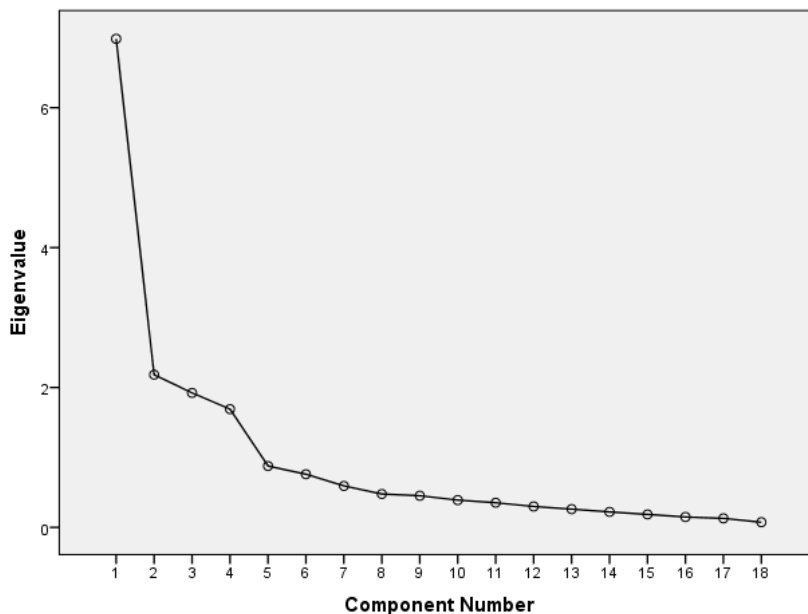
Figure 2: Scree Plot

Figure 2 shows the Eigenvalues based on Table 3, Total Variance Explained. The figure shows an elbow with four components. In total, seven factors, including Performance Expectancy, Effort Expectancy, Trust, Security and Privacy, Satisfaction, Facilitating Conditions, and Customisation and Functionality, were extracted.

Table 3: Rotated Component Matrix

S. No.	Impact of Self-Service Technology on User Behavioural Intention to Adopt SST	Factor Reliability
	Performance Expectancy	0.870
	Effort Expectancy	0.856
	Trust	0.952
	Security and Privacy	0.887
	Satisfaction	0.849
	Facilitating conditions	0.790
	Customization and Functionality	0.740
DV	User Behavioural Intention to Adopt SST	

4.2 Construct-wise Reliability of All Factors

The reliability of various factors can be observed as the first factor, the reliability of 'Performance Expectancy' (0.870) and the second factor 'Effort Expectancy' (0.856). The reliability of trust is (0.952) and 'Security and Privacy' is (0.887). 'Satisfaction' has 0.849 reliability, and 'Facilitating Conditions' has (0.790) factor reliability. The last factor, i.e., 'Customisation and Functionality', has a factor reliability of (0.740).

Table 4: Statistics of reliability

Cronbach's Alpha	Items
.893	32

As shown in Table 4, there are 32 items, which include the variables that are associated with the Self-Service Technology (SST), i.e., Performance Expectancy, Effort Expectancy, Trust, Security and Privacy, Satisfaction, facilitating conditions, and Customisation and Functionality, and User Behaviour and total reliability found is 0.893.

4.3 Multiple Regression Analysis

The "adjusted R square" value is 0.877, as shown in Table 5, which indicates that this model explains approximately 87% of the variation.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.937a	.878	.877	.27601
Predictors: (Constant), Performance expectancy, Effort expectancy, Trust, Security and Privacy, Satisfaction, Facilitating conditions and Customisation and Functionality.				

Table 6: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	178.102	4	44.525	584.471	.000b
	Residual	24.683	324	.076		
	Total	202.784	328			
DV: User Behavioural Intention to Adopt SST						
Predictors: (Constant), Performance expectancy, Effort expectancy, Trust, Security and Privacy, Satisfaction, Facilitating conditions and Customisation and Functionality.						

Table 6 (ANOVA) shows whether the IDVs significantly impact the DVs. The significance value (0.000) is less than 0.05, reflecting that one or more of the IDVs significantly influence the DV.

Table 7: Coefficients[a]

Model	Un standardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.939	.015		258.872	.000
Performance Expectancy	0.742	.015	.789	49.107	.000
Effort Expectancy	0.720	.015	.760	48.670	.000
Trust	0.698	.015	.888	45.816	.000
Security and Privacy	0.160	.015	.203	10.485	.000
Satisfaction	0.151	.015	.192	9.931	.000
Facilitating Conditions	0.139	.015	.186	8.757	.000
Customization and Functionality	0.084	.015	.107	5.499	.000
DV: Overall User Behavioural Intention to Adopt SST					

Table 7 illustrates the study factors: Performance Expectancy, Effort Expectancy, Trust, Security and Privacy, Satisfaction, Facilitating Conditions, and Customisation and Functionality. The obtained value for all these factors is below 0.05. The results demonstrated a significant impact on the dependent variable, i.e., user behavioural intention to adopt SST.

5 Conclusion

Self-service technologies have progressively developed and become a vital aspect of the customers' daily shopping routine. SST is a technology which has been widely embraced by many people worldwide. This trend is at an ever-increasing rate, especially in developed countries. SST emerged as a significant trend in service delivery. It is, therefore, crucial to investigate the impact of SST factors on user behavioural intention. These factors include Performance Expectancy, Effort Expectancy, Trust, Security and Privacy, Satisfaction, Facilitating Conditions, and customisation and Functionality. These SST factors represent significant factors that influence the users' behaviour regarding using self-service technology. The results of this study revealed that the SST factors have a significant, direct effect on user behavioural intention to adopt self-service technology in Saudi Arabia's retail industry.

The findings of this study have several practical and managerial implications regarding a deeper understanding of the SST users' attitudes and behaviours. In this regard, service organisations must investigate the factors that may lead to customer satisfaction or dissatisfaction when adopting and using self-service technology. At the same time, firms must maintain high security and privacy standards to gain greater confidence in the technological interface. Through consistent monitoring and evaluation, service firms must take the initiative to drive positive customer intentions toward the SST. These steps may assist service providers in providing necessary information regarding improving the service delivery system by using this service technology. Firms should also use methods that give their customers more personal freedom, and

technological functionality should provide more customised services to their SST users or customers. The findings of this study provided valuable insights for Saudi Arabia service companies to invest further in new technologies like SST. In the current digital age and over the next few years, service companies will rely heavily on emerging innovations and technologies to provide better service quality. Therefore, businesses should focus on improving their customer experience by implementing advanced technological user interfaces. Furthermore, reputed service firms can introduce effective initiatives to improve technological literacy among their customers and take action to make consumers understand and be aware of such services or systems. This would surely be a critical factor in achieving the firm's success and productivity, improving customer satisfaction and loyalty, and changing user behaviours to positive, self-assured ones.

In Saudi Arabia, SST is currently in its starting phase. Therefore, further research is required when this trend is more prevalent among users who adopt self-service technology. Researchers can also choose different countries for respondents, and a cross-cultural comparison can be performed. It would be more beneficial if other factors are examined, such as social influence, as well as different group ages of the customers. The main contribution of this study is that it provided empirical evidence of user behavioural intention regarding the use of SST and the factors influencing users' behaviours, including Performance Expectancy, Effort Expectancy, Trust, Security and Privacy, Satisfaction, Facilitating Conditions, and Customisation and Functionality. The results have contributed to SST and service delivery literature regarding the factors' relationships. Finally, the findings of this study have empirically supported the previously constructed relationships between self-service technology and user behavioural intention.

6 Availability of Data and Material

Data can be made available by contacting the corresponding author.

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