EXAMINING THE ASSOCIATION BETWEEN PASSENGERS' ACCEPTANCE AND INTENTIONS TOWARD E-TICKETING AND RESERVATION SYSTEMS IN SRI LANKAN RAILWAYS

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Abstract

The introduction of e-ticketing and seat reservation system in Sri Lanka provides passengers with a new experience, while also improving the efficiency of the country's railway system by embracing modern technology. In 2022, Sri Lanka introduced the E-ticketing and seat reservation system for the railway sector as an adaption to modern technology. However no sufficient understanding in the literature about how passengers accept the E-ticketing and reservation system of Sri Lankan Railways influences their behavioral intentions to use that system. Therefore the study attempts to examine the intentions of local passengers in Sri Lanka to utilize the e-ticketing and seat reservation system in the country's railway system. This research employed a deductive approach and utilized a quantitative methodology, grounded in the Theory of Planned Behaviour (TPB) and the Technology Acceptance Model (TAM). Moreover, 404 passengers at Kotuwa railway station were surveyed using the convenience sampling technique to gather data. Structural equation modeling was employed for data analysis. Findings showed that the e-ticketing seat reservation system's usage intention among domestic passengers is influenced significantly by perceived usefulness, ease of use, and attitudes. Thus, this research offers fresh insights for the stakeholders looking to improve the e-ticketing and seat reservation system in Sri Lanka.

keywords: E-ticketing and reservation system, Domestic passengers' intention, Perceived Usefulness, Ease of Use, Attitude

INTRODUCTION

Many individuals around the world rely on the railway as their main mode of transportation, highlighting its importance in the transportation industry (Givoni & Rietveld, 2014). In Sri Lanka, the Sri Lanka Railway (SLR) is the sole provider of railway services and functions as a government-owned entity under the Ministry of Transport (Sri Lanka Railways, 2024). Created for the purpose of guaranteeing effective and dependable transportation, SLR is responsible for supervising transportation services and controlling railway facilities nationwide (Sri Lanka Railways, 2024). With a vast train network linking different areas, the SLR faces the difficult task of meeting the daily transportation needs of almost 3.72 million people, a number that highlights its significance for both everyday commuters and the economy (Jayasuriya & Nimesha, 2021).

However, buying train tickets is especially challenging because of the high volume of passengers. The current method of obtaining tickets often creates long queues at ticket counters in the busiest train stations, resulting in notable delays and irritation for both local commuters and international passengers (Jayasuriya & Nimesha, 2021). This lack of effectiveness is now a significant issue in the current train seat booking system (Jayasuriya & Nimesha, 2021). Passengers frequently experience discomfort while waiting in line, impacting their travel experience and potentially discouraging them from utilizing train services (Perera, Nazeer, & De Alwis, 2023). Railway system delays can inconvenience passengers and create a poor perception of the system's efficiency, which may affect future use (Friman & Gärling, 2001).

To overcome these obstacles, introducing an electronic system for ticketing and reserving seats is seen as a more effective method to enhance the efficiency and utilization of public transportation (Alonso & Larrubia, 2016) This new system not only addresses the problems with the current ticketing process but also simplifies the process of making reservations and buying tickets online (Jayasuriya & Nimesha, 2021). The SLR plans to improve service and overcome ticketing challenges by introducing a new online ticketing system (Ministry of Transport and Highways, 2024). This modification guarantees an improved travel experience for passengers through increased convenience and accessibility. Moreover, the option to buy tickets through the Internet may decrease the tasks of ticket counter employees, enabling them to concentrate on enhancing customer service in different parts of the station (Ministry of Transport and Highways, 2024).

Because of these developments, the Sri Lankan government has begun implementing an e-ticketing system in the Sri Lanka Railway Department, recognizing the benefits it could bring (Sri Lanka Railways, 2024). Expectations are that this adjustment will result in numerous advantages, including reduced staff costs, decreased reliance on physical tickets, and improved efficiency when purchasing tickets (Weerasooriya, 2016). Additionally, the transition to digital ticketing is in line with worldwide trends in public transport, as many nations are implementing the same technologies to improve efficiency and convenience for passengers (Weerasooriya, 2016). Despite these advancements, many train stations in Sri Lanka still rely on conventional paper

ticketing methods (Perera, Nazeer, & De Alwis, 2023). As a result, reliance on conventional practices leads to increased expenses for employees, paper, and printing, while also inconveniencing passengers with long waits at ticket booths. (Perera, Nazeer, & De Alwis, 2023).

In this situation, it is crucial to examine passengers' behavioral intentions to adopt the e-ticketing system (Jayasuriya & Nimesha, 2021). Further, it is essential to comprehend the factors that impact passenger acceptance to guarantee the effective adoption of this system. To achieve this, the study utilized the Technology Acceptance Model (TAM) by Venkatesh and Davis (1996) and the Theory of Planned Behaviour (TPB) by Ajzen (Ajzen, 1991; Venkatesh, Morris, & Davis, 2003). These frameworks are crucial for examining the complexities of user behavior in adopting technology, offering important insights for railway authorities to make informed strategic decisions.

The Technology Acceptance Model suggests that the adoption of technology is influenced by how easy it is to use and how useful it is perceived to be. Alalwan, Dwivedi, & Rana, (2017) are the authors of the mentioned study. Passengers in the e-ticketing system need to feel that the system is user-friendly and offers clear advantages like saving time and providing convenience (Lübeck, Wittmann, & Battistella, 2012). Passengers are more inclined to not use the system if they perceive it as complicated or hard to navigate, which negates any potential advantages it could offer (Lübeck, Wittmann, & Battistella, 2012). Ajzen (1991) underlines the impact of attitudes, subjective norms, and perceived behavioral control on individual intentions in the Theory of Planned Behaviour. This framework enables a more thorough comprehension of how social influences and individual perceptions can impact a passenger's choice to embrace new technology.

Therefore, this study seeks to propose and examine an integrated framework that explains the different elements affecting local passengers' willingness to use the e-ticketing system in Sri Lanka Railways by combining the two models of the Technology Acceptance Model and Theory of Planned Behaviour. This comprehensive approach examines not just the direct effects of perceived ease of use and usefulness, but also considers the broader social context in which decisions are being made (Ajzen, 1991). Ultimately, the knowledge obtained from this study may be extremely helpful in directing the successful implementation of the e-ticketing platform, guaranteeing that it fulfills the requirements and anticipations of its users.

Hence, Sri Lanka Railways must grasp passenger behavior and the factors influencing technology acceptance as they transition to e-ticketing. This study seeks to offer a detailed perspective on how domestic passengers can be motivated to adopt this new system, leading to a more efficient and user-friendly railway journey, utilizing existing theoretical models.

Research Question

What are the factors influencing passengers' acceptance and intentions to adopt e-ticketing and seat reservation systems in Sri Lankan Railways?

Research Objectives

The dependent variable of this study is passengers' intention and the independent variable is the use of e-ticketing and seat reservation system which is protected by the Theory of Planned Behaviour (TPB) and Technology Acceptance Model (TAM). According to the Theory of Planned Behaviour (TPB), it provides 3 dimensions including Attitude toward the Behaviour, Subjective Norm, and Perceived Behavioural Control to measure the user acceptance of technology. Further, the initial version of the Technology Acceptance Model (TAM) provides 2 key dimensions that determine users' technology acceptance including Perceived Usefulness, and Perceived Ease of Use. Therefore this study combines the Technology Acceptance Model (TAM) with the Theory of Planned Behaviour (TPB) to look at how people accept e-ticketing. While TAM is simpler than its later versions, it doesn't consider factors like subjective norms and attitudes. To fill this gap and understand how others might influence decisions, this study adds subjective norms and attitudes from TPB. Further final version of this model is built based on previous research on e-ticketing and seat reservation systems. Therefore specific objectives and hypotheses were developed to study as follows;

1. Perceived Usefulness and passengers' intention

2. Perceived Ease of Use and passengers' intention

3. Attitude toward Usage and passengers' intention

4. Subjective norms and passengers' intention

LITERATURE REVIEW

Theoretical framework

The Technology Acceptance Model is a widely recognized framework for understanding technology adoption. It identifies two key factors that affect a person's intention to use new technology: perceived ease of use and perceived usefulness. (Venkatesh & Davis, 1996). This theory proposes that perceptions of an information system's usefulness and ease of use impact attitudes toward its usage (Davis, 1989). TAM was developed using the theory of reasoned action to explain consumer behavior (Venkatesh, Morris, & Davis, 2003). The theory of reasoned action (TRA) posits that an individual's actions are based on their intention, shaped by their attitude and subjective norm towards the behavior (Trafimow & Fishbein, 1994). Davis et al. modified the initial TAM to incorporate intention as a factor in determining the real usage of computer systems (Davis, Bagozzi, & Warshaw, 1989). The attitude construct was removed in the final version of TAM because perceived usefulness and ease of use were found to directly impact behavior intention (Venkatesh & Davis, 1996). Since that time, a lot of research has altered, expanded, utilized, and evaluated the model. Venkatesh and Davis expanded the initial model by introducing TAM2, which included the subjective norm as a new factor affecting usage intention. TAM2

suggested that perceived usefulness is influenced by subjective norms, image, job relevance, and result demonstrability (Venkatesh & Davis, 2000).

A few years afterward, Venkatesh and his team created the UTAUT model by analyzing eight established theories on technology adoption and customer behavior (Venkatesh, Morris, & Davis, 2003). UTAUT consists of four elements that influence intention and usage: performance expectancy, effort expectancy, social influence, and facilitating conditions such as organizational readiness and infrastructure adequacy. These factors bear some resemblance to TAM2 (Venkatesh & Davis, 2000). For instance, performance expectancy is similar to perceived usefulness, effort expectancy is like ease of use, and social influence is somewhat comparable to subjective norm (Engel, Moosbrugger, & Müller, 2003). Later on, Venkatesh and other researchers enhanced the UTAUT model by adding three more elements - hedonic motivation, price value, and habit - to forecast behavioral intention. The researchers of the TAM or extended TAM researched organization employees, MBA students, and potential customers to analyze the adoption patterns of information systems or computer systems. However, different researchers employed TAM to examine the willingness to adopt or refuse self-service technologies or e-ticketing (Bandura, 1982). Calantone et al pointed out that the Western model for predicting technology acceptance behavior was not suitable for developing countries (Calantone, Griffith, & G, 2006). Therefore this study utilized TAM dimensions.

The Theory of Planned Behavior (TPB) is another well-known consumer behavior model (Ajzen, 1991). The development involved expanding the TRA, which previously did not incorporate perceived behavioral control in predicting behavioral intentions. However, TPB suggested that perceived behavioral control is a key determinant of behavioral intentions, along with attitude and subjective norm (Ajzen, 1991). Both TRA and TPB both believe that intention directly influences behavior. Taylor & Todd, (1995) elaborated on the TPB by breaking down its components into belief-based indirect metrics. The writers theorized that attitude is connected to relative advantage, compatibility, and complexity; the subjective norm is linked to normative influences; and perceived behavioral control is associated with efficacy and facilitating conditions (Ajzen, 1991). Breaking down belief systems into multi-dimensional constructs offers a thorough comprehension of the connections between constructs, TPB and the decomposed Theory of Planned Behavior were applied to forecast consumer adoption of self-service technologies and e-ticketing (Bandura, 1982). Researchers combined elements of TPB and TAM to forecast the technology acceptance behavior of customers (Venkatesh & Davis, 1996).

Therefore, the TAM and the TPB have been combined in this study to analyze self-service e-ticketing acceptance behavior. TAM is simpler to comprehend than the later altered versions of the model but still demonstrates strong predictive abilities in various situations (Venkatesh & Davis, 1996). Although users frequently make e-ticketing decisions within a group context, the updated Technology Acceptance Model (TAM) fails to address the role of subjective norms. Given that individual choices in e-ticketing are often influenced by the opinions and behaviors of their

peers, this research incorporates subjective norms from the TPB to provide a more comprehensive understanding of user decision-making in this domain.

Perceived Usefulness and passengers' intention

Perceived usefulness evaluates how much a particular technology enhances users' productivity and performance in their duties. (Warshaw & Davis, 1985). Further, users must see new technology as useful, accept it and start using it. The perceived ease of use of an information system or new technology is connected to its perceived usefulness (Davis, 1989). According to Davis, (1989) individuals' attitudes and readiness to embrace information systems and new technologies are greatly shaped by how they perceive the usefulness of these tools. Numerous factors play a role in shaping this view, such as subjective norms, social image, job importance, output quality, and the ability to demonstrate results. These factors together influence how users evaluate the worth of new technologies.

Ease of use and passengers' intention

Perceived ease of use is the extent to which a person thinks that using a specific system will be easy (Warshaw & Davis, 1985). The perceived ease of use is a reflection of Bandura's theory on self-efficacy (Bandura, 1982). However, Venkatesh and Davis suggested that self-efficacy in computer skills enhances users' belief in the ease of using a system, both before and following its use (Venkatesh & Davis, 1996). Further Venkatesh and Davis suggested that emphasizing training interventions to enhance user efficacy has a greater impact on increasing user adoption of technology than focusing on interface design. In addition, having confidence in oneself decreases anxiety around technology and enhances the perceived ease and usefulness, which impacts the adoption or acceptance of technology (Bandura, 1982). Further, TAM suggested that how easy an information system is to use determines one's attitude towards it (Davis, Bagozzi, & Warshaw, 1989). According to Warshaw & Davis, (1985), the level of user-friendliness is also a factor that influences the intention to use technology.

Subjective norm and passengers' intention

Subjective norm is how a person sees the influence and expectations from others about a specific behavior. It shows how peers, family, or social groups affect an individual's decision-making process, influencing their tendency to embrace specific technologies or practices (Kelman, 1958). Social pressure and the influence of peers have been linked to a rise in altruistic decisions. (Latan´e, 1981). Allport, (1985) showed that a slight hint, like the feeling of others being around, could have a comparable effect even if it was not related to real observation and possible future benefit. Subjective norm is formed by an individual's beliefs regarding the opinions of significant others on whether they should or should not partake in a behavior (Allport, 1985). Individuals change their attitudes and behavior based on how they think others will react, as stated by Kelman (Kelman, 1958). Various societies perceive social pressure differently among people. Research shows that people living in collectivist societies tend to have more elevated levels of subjective norms than

those in individualistic societies (Kelman, 1958). Trafimow and Fischbein suggested that people consider subjective norms to be more significant when their intended behavior includes groups instead of just the individual (Trafimow & Fishbein, 1994). According to Ajzen, (1991), the influence of subjective norms has grown due to technological advancements such as the Internet. People are increasingly swayed by the opinions shared in online communities or social media groups (Ajzen, 1991). People take into account subjective norms when they change their attitudes and actions after engaging with individuals who are perceived as similar, well-liked, and well-informed, a crucial factor in deciding behavioral intention. (Ajzen, 1991). Kim and colleagues discovered that there is no direct impact of subjective norms on behavioral intention (Kim, Yang, & Choi, 2013). Attitude is a factor in connecting subjective norms and intention to behave. Venkatesh and Davis proposed that the intention to use technology is influenced by subjective norms (Venkatesh & Davis, 1996).

Attitude and passengers' intention

According to Argyriou & Melewar, (2011), Attitude is a mental inclination shown through appraisals of different objects, individuals, or actions, frequently perceived as positive or negative. It has a vital impact on consumer behavior and decision-making. There are two main viewpoints on how attitudes are created: the Functional Theory and the Constructivist Theory (Eagly & Chaiken, 1993). The Functional Theory sees attitudes as formed from initial exposure, stored in memory, and later recalled, serving purposes such as organizing information, expressing values, conforming to social norms, and assessing rewards. However, the Constructivist Theory proposes that attitudes are not simply recalled from memory but are formed in real time, depending on the situation and current objectives of the person (Eagly & Chaiken, 1993). These different viewpoints highlight the evolving nature of attitudes and how they influence behavior.

According to the Theory of Planned Behaviour (TPB), a person's attitude influences their intention to perform a particular behavior (Ajzen, 1991). A positive attitude toward technology is important to accept technology (Hussein, 2017). Not only that Park examined the role of attitude in shaping behavioral intention from a cross-cultural perspective and discovered that attitude is a significant predictor of behavioral intention in both collectivist and individualistic cultures (Park, 2000). Therefore this study seeks to assess the relationship between attitudes toward technology and the intention to use the e-ticketing system.

Empirical studies on the user acceptance of E-Ticketing

Researchers have shown an increasing understanding of the importance of technology in improving public transportation through the implementation of e-ticketing and seat reservation systems in Sri Lankan Railways. An important part of this change includes ensuring customers are satisfied, especially about railway infrastructure. Perera, Nazeer, & De Alwis. (2023) was conducted on customer satisfaction at train stations in Sri Lanka, highlighting how well-maintained and conveniently located infrastructure plays a crucial role in influencing users' opinions. Understanding this

basic concept emphasizes the necessity of establishing high-quality infrastructure before effectively rolling out digital ticketing solutions. Passengers are more likely to embrace technological advancements like e-ticketing when they are satisfied with the physical setting of the railway system.

Additionally, Rajapaksha, Hewagamage, & Assalaarachchi. (2024) investigated the specific motivations that drive young tourists in Sri Lanka to utilize electronic ticketing services in 2024. Their study indicated that the acceptance of technology and the desire for ease of use are significant factors in promoting utilization. This research highlights the importance of targeting younger age brackets using personalized marketing strategies that resonate with their online activities and preferences. Understanding these factors can help railway agencies develop effective tactics to increase the use of e-ticketing services.

Weerasooriya (2016) explores the shift from conventional paper ticketing to an Automated Railway Ticketing System which incorporates the use of the Electronic National Identity Card. The research highlights the benefits of putting in place this system, such as increased operational efficiency, lowered costs, and better user experience. The research shows how connecting electronic ticketing to national identity verification can simplify ticket buying and improve security measures. Weerasooriya's research adds to the current literature on e-ticketing by showing how advanced technologies can improve traditional ticketing systems in the railway industry, promoting the use of electronic solutions.

Kim, Yang, and Choi (2013) investigate how attitude, subjective norms, and perceived behavioral control influence consumer behavior in the hospitality management field. Their research brings attention to how these mental concepts intertwine to impact the decisions and behaviors of consumers about using services. The authors offer valuable insights into the factors influencing consumer decisions in hospitality settings through an analysis of the relationships between variables. Their results highlight the significance of recognizing consumer attitudes and societal impacts, which can guide tactics for improving customer interaction and contentment in the sector. This study adds to the existing body of knowledge on consumer behavior by demonstrating the practical application of theoretical frameworks in the field of hospitality management.

Sulaiman, Ng, and Mohezar (2008) examine how Malaysians view e-ticketing as a new method of buying tickets. The research shows important factors that impact consumer adoption of e-ticketing, such as perceived ease of use, security issues, and overall user satisfaction. Through the examination of both qualitative and quantitative data, the authors offer a perspective on Malaysian consumers' views on this technology, showcasing the possible advantages and obstacles linked to its implementation. The results emphasize how important it is for vendors to resolve consumer concerns about security and privacy to increase the use of e-ticketing systems. This study enhances comprehension of e-ticketing in Malaysia, contributing to the worldwide conversation on the adoption of digital ticketing in different sectors.

In addition, Theoretical frameworks offer crucial understandings of the behaviors linked to adopting technology. Ajzen's (1991) Theory of Planned Behaviour offers a solid framework for comprehending how attitudes, subjective norms, and perceived behavioral control influence individual intentions. This framework is useful for examining how potential users view the advantages and obstacles related to e-ticketing. Additionally, Venkatesh and Davis (1996) further explore this topic by highlighting the importance of perceived ease of use, proposing that streamlining the digital interface can improve user adoption. This is especially important in the e-ticketing context, as difficult navigation can discourage potential users. Incorporating user feedback into the design of systems can greatly enhance the overall user experience and increase adoption rates.

Models like TAM and UTAUT offer further frameworks for comprehending technology acceptance in transportation settings. These models indicate that the decision to adopt new technologies is heavily influenced by how useful and easy to use they are perceived to be. For Sri Lankan Railways to adopt e-ticketing systems, the benefits like saving time, shorter lines, and increased ease must be evident to persuade passengers to change from conventional methods.

Approaches in methodology are important for assessing the factors that impact user intention. Engel et al. (2003) offer a perspective on structural equation modeling, a statistical method that can efficiently evaluate the connections between different factors influencing user intentions. Using these methods helps researchers gain a deep understanding of the dynamics of e-ticketing adoption and pinpoint key areas that need improvement.

Additionally, Jayasuriya and Nimesha's (2021) research delves into the real-world consequences of introducing intelligent ticketing and seat reservation systems in the railways of Sri Lanka. Their study highlights the importance of combining new technologies with current operational structures to improve both service delivery and customer satisfaction. This incorporation is vital in dealing with possible opposition to new systems and guaranteeing a seamless switch to digital ticketing.

In conclusion, the literature highlights the multifaceted nature of the factors influencing the intention to use e-ticketing and seat reservation systems in Sri Lankan Railways. From customer satisfaction related to infrastructure to demographic influences and theoretical frameworks, each element plays a critical role in shaping user adoption. As Sri Lanka continues to advance its railway services, understanding these dynamics will be vital for promoting effective and user-friendly e-ticketing solutions.

MATERIALS & METHODS

The research used a deductive approach to create hypotheses, drawing from established theories in the technology acceptance and behavior area. This technique relies on the study conducted by Venkatesh and Davis (1996), who presented a detailed framework for understanding user engagement with technology.

To achieve the research objective in this investigation, a quantitative research method was employed, integrating the Theory of Planned Behaviour (Ajzen, 1991). And the Technology Acceptance Model (Venkatesh & Davis, 1996). The Theory of Planned Behaviour suggests that a person's behavior is mainly influenced by their intentions, which are influenced by their attitudes, subjective norms, and perceived control over the behavior. Therefore, it is especially important in this theoretical framework to grasp how passengers view the benefits and obstacles of the e-ticketing system.

The study was focused on all individuals in Sri Lanka who are currently using or are interested in using railway e-ticketing systems. To establish an appropriate sample size, Cochran's formula was applied, resulting in a sample size of 404, with a 5% non-response rate, considering the population to be infinite. This assessment guarantees that the sample is both statistically significant and reflective of the larger population.

Convenience sampling was chosen for data collection due to the absence of exact passenger records and the fact that the population is infinite. (Babbie). The sample collection started by choosing two particular spots in the Kotuwa railway station that were ideal for reaching a varied group of passengers. In the next phase, the convenience sampling technique was used to choose participants from this predetermined group. The method of convenience sampling began with selecting a random number to determine where to start within the first group of potential participants. Starting here, every third person was selected to participate. This approach not only supports randomness but also guarantees a systematic portrayal of the passenger demographic.

After making contact with each chosen person, the researchers gave a thorough explanation of the study's goals and intentions. This level of transparency was essential for getting informed consent and creating a collaborative environment. Afterward, participants received surveys created to collect important information about their thoughts, opinions, and plans regarding the e-ticketing system.

The surveys were carefully designed using established theories and knowledge obtained from prior research investigations. This ensured the questions were relevant and thorough, addressing different aspects of user experience with the e-ticketing system. The research sought to gather first-hand insights into passenger behaviors and preferences by focusing on primary data obtained from these questionnaires.

The information collected from the questionnaires that were filled out was analyzed through the use of structural equation modeling (SEM). This method of analysis enables researchers to explore relationships between various variables, test hypotheses, and derive significant conclusions from the data. Through the use of SEM, the research aims to reveal the complex interactions of perceived usefulness, ease of use, and other variables on the adoption intention of the e-ticketing and seat reservation system.

Conceptualization

Figure 1 : Conceptualization
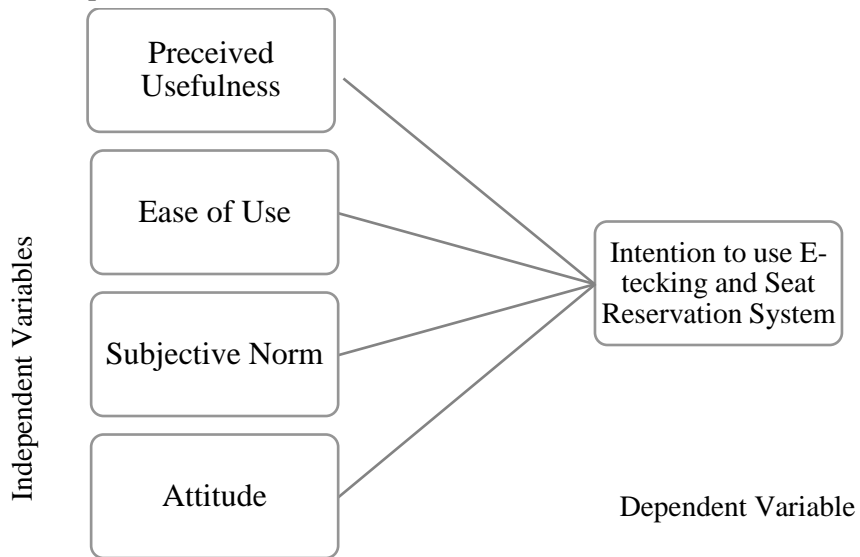
Source: Ajzen, (1991), Davis, (1989)

Table 1: Operationalizations

Construct	Indicators	Contents	Source
Intention to use the Technology	In1	I intend to use the E-ticketing system for my visits	(Marquez, Cianfrone, & Kellison, 2020) , (Ajzen, 1991)
	In2	I plan to purchase an online ticket for my visits	
	In3	I will use E-ticketing for my visit in the next 6 months.	
Perceived Usefulness	PU1	An E-ticketing system would help buy tickets more quickly	(Davis, 1989)
	PU2	An E-ticketing system would make it easier to buy the tickets.	
	PU3	E-ticketing would be useful for me in my future.	
Ease of use	EU1	It would be easy to learn the E-ticketing process	(Davis, 1989)
	EU2	It would be easy to buy an E-ticket for my visits	
	EU3	An E-ticketing system would be understandable.	
Attitude	Att1	The E-ticketing system is pleasant	(Ajzen, 1991)
	Att2	The E-ticketing system is good	
	Att3	The E-ticketing system is useful.	
Subjective norms	SN1	Most people (who are important to me) will approve if I use an e-ticketing system.	(Ajzen, 1991)

	SN2	Most people (who are important to me) will think that I should use an e-ticketing system for my visits.

Source: Ajzen, (1991), Davis, (1989), (Marquez, Cianfrone, & Kellison, 2020)

RESULTS AND DISCUSSION

Reliability and Validity of the data

The first stage examined the convergent and discriminant validity of the constructs and the reliability of all the multiple-item scales. The assessment of convergent validity was done in terms of factor loadings and average variance extracted (AVE). The table shows the factor loadings of each item which indicates that all the factor loadings were statistically significant and were above the minimum acceptable value of 0.70 (Fornell & Larcker, 1981).

Table 2: Standardized Factor loadings

Indicator	Standardized Factor loadings
PU3	0.893
PU2	0.924
PU1	0.866
EU3	0.794
EU2	0.913
EU1	0.845
SN2	0.875
SN1	0.892
Att3	0.887
Att2	0.913
Att1	0.941
In3	0.986
In2	0.976
In1	0.954

Source: Survey Data, 2024

According to Gupta & Dogra, (2017), the reliability of the indicators was also verified by using the Composite reliability coefficient, AVE values, and Cronbach coefficient alpha. The values of all the coefficients are presented in the below table, Since the Composite reliabilities and Cronbach alpha coefficients are above the minimum acceptable levels of 0.70 and it is recommended for confirmatory research.

Table 3 Reliability and Validity measurements

Construct	AVE	Composite Reliability	Cronbach Alpha
Perceived Usefulness	0.800	0.920	0.922
Ease of Use	0.700	0.920	0.898
Subjective Norm	0.763	0.920	0.928
Attitude	0.835	0.966	0.935

Intention to use the system	0.945	0.979	0.981

Source: Survey Data, 2024

Model fit indicators

When evaluating the fit indices to access the models, the DF/CMIN value should be less than 3 and, RMSEA values ≤ .05 be viewed for a better model. Moreover, RMR values close to zero suggest a good fit. Further NFI, AGFI, TLI, CFI, RFI, RNI, PGFI, PNFI, and PCFI values range in general from zero to one, and higher values close to zero indicate a better fit. Therefore, this overall model is acceptable through the significance of all the fit indices as follows.

Table 4: The goodness of fit indexes

Absolute fit indices	CMIN	2.243
	AGFI	0.889
	RMESA	0.056
	RMR	0.027
Incremental fit indices	TLI	0.968
	CFI	0.974
	RFI	0.944
	NFI	0.954
	RNI	0.944
Parsimony fit indices	PGFI	0.691
	PNFI	0.790
	PCFI	0.807

Source; Survey data (2024)

Results of the Path Analysis

Table 5 Results of the Path Analysis

Hypothesis	Path	Estimate	S.E.	C.R.	P	Hypothesis test result
H$_1$	In <--- PU	.093	.053	1.755	***	H1 Supported
H$_2$	In <--- EU	.743	.078	9.587	***	H2 Supported
H$_3$	In <--- SN	-.006	.065	-.094	.925	H3 Rejected
H$_4$	In <--- Att	.086	.041	2.097	***	H4 Supported

Source: Survey data (2024)

The path analysis results indicated that the CR value for perceived usefulness was 1.755, exceeding the significance level of 1.96, which confirms statistical significance at the 0.05 level. Consequently, the null hypothesis is rejected. It demonstrates a significant influence on the intention to use the E-ticketing and seat reservation system in Sri Lankan railways. Further, study findings support previous findings (Weerasooriya, 2016), (Davis, 1989) , and (Sulaiman, Ng, & Mohezar, 2008). they revealed that perceived usefulness was found to be an important factor for users' technology acceptance behavior.

For ease of use, the CR value was 9.587, also above 1.96, indicating a significance level of 0.05. Thus, the null hypothesis is rejected again, confirming its significant

impact on the intention to use the system. Accordingly, this finding also supports previous findings of (Rajapaksha, Hewagamage, & Assalaarachchi, 2024), (Sulaiman, Ng, & Mohezar, 2008), (Davis, Perceived usefulness, perceived ease of use, and user acceptance of information technology, 1989) and (Weerasooriya, 2016).

In contrast, the CR value for subjective norm was -0.094, which is below 1.96, indicating a lack of significance at the 0.05 level. Therefore, the null hypothesis is accepted, suggesting no significant influence on the intention to use E-ticketing and seat reservation systems. Further, study findings support previous findings of (Venkatesh & Davis, 2000).

Further, the CR value for attitude was 2.097, exceeding 1.96 and reaching a significance level of 0.05, leading to the rejection of the null hypothesis, indicating a significant influence on the intention to use the E-ticketing and seat reservation system. Further, study findings support previous findings of (Kim, Yang, & Choi, 2013), (Ajzen, 1991).

Figure 2: Figure of the Structural Model
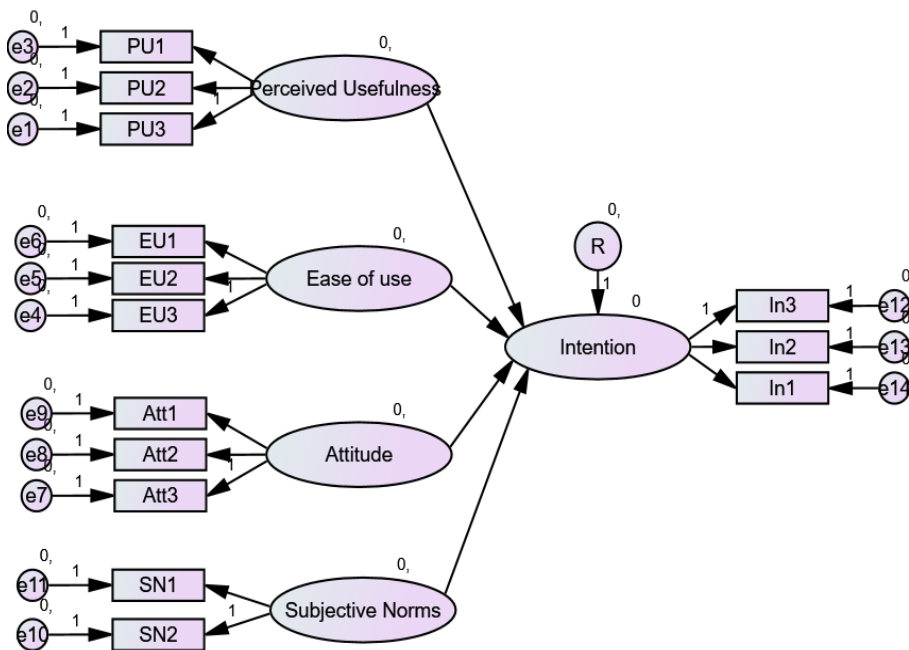
Source: Survey data (2024)

CONCLUSION

This study explores key factors influencing domestic passengers' willingness to adopt the Sri Lankan railway's e-ticketing and seat reservation system. Knowing the factors that affect passenger behavior is essential for the system's successful implementation, as it significantly affects user approval and happiness. The study focuses on

understanding what drives domestic passengers to use this smart ticketing solution, which is meant to make ticketing easier and enhance travel efficiency in general.

To accomplish this, the research includes four separate factors taken from well-known technology acceptance models identified in previous studies: perceived usefulness, ease of use, subjective norm, and privacy concerns. Evaluating various features of the e-ticketing system is crucial for understanding their impact on the intentions of domestic passengers. Perceived usefulness is the degree to which travelers think that the e-ticketing system will improve their journey through benefits like convenience and time saved. The user-friendliness of the system impacts the level of comfort passengers feel when using it. Subjective norm looks at how social pressures and norms impact individual actions, while privacy concerns focus on passengers' fears regarding data security and safeguarding personal information.

By conducting empirical analysis, it was confirmed that these influencers are trustworthy and effective in influencing the usage of the e-ticketing and seat reservation system for the Sri Lankan railway among the selected sample. This validation process included thorough testing of the hypotheses, guaranteeing that the identified variables truly represent the factors influencing the adoption of the system. The results suggest that perceived usefulness, ease of use, and privacy concerns have a significant impact on domestic passengers' intentions to use the e-ticketing and seat reservation system.

Moreover, the research emphasizes that the primary factor impacting the inclination to use e-ticketing and seat reservation services in the Sri Lankan railways is the ease of use. This discovery highlights the significance of developing a user-friendly interface that meets the needs of all passengers, irrespective of their tech skills. If the system seems difficult or complex, it will probably discourage potential users and they will continue using traditional ticket-buying methods.

Furthermore, the research also examines the wider impacts of improving user experience in public transportation systems, in addition to these key factors. With urbanization and travel demands on the rise, railway authorities must incorporate creative solutions to meet the requirements of contemporary travelers. By prioritizing the enhancement of the e-ticketing system's ease of use, the Sri Lankan railway can improve both passenger satisfaction and the sustainability and efficiency of its transportation infrastructure.

The findings offer actionable insights for system developers, railway authorities, and policymakers and the findings of this research offer guidance for those engaged in creating and executing the e-ticketing system. Comprehending the unique factors that influence user intentions enables railway authorities and policymakers to customize their approaches in effectively addressing passenger issues. For example, efforts focused on improving data privacy, increasing system usability, and effectively communicating the advantages of the e-ticketing system can result in increased adoption and usage rates from local travelers.

To sum up, the research highlights the crucial elements that impact the implementation of e-ticketing and seat reservation systems in Sri Lanka's train system. It emphasizes the importance of focusing on users when creating technology solutions for public transportation, especially regarding perceived usefulness, ease of use, and privacy considerations. Improving the user experience can help facilitate the switch to digital ticketing, ultimately enhancing the travel experience for numerous passengers in Sri Lanka.

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