

The Role of Social-Cognitive Determinants in E-Government Adoption by Citizens in Sri Lanka

Ayesha Godagama¹, Ali Khatibi², Ferdous Azam³

¹PhD student, Management and Science University (MSU), No 4, University Drive, Off Jalan Persiaran Olahraga Seksyen 13, 40100 Shah Alam, Selangor – Malaysia. Email: godagamaayesha@gmail.com

²Professor, Faculty of Business Management and Professional Studies (FBMP) - Graduate School of Management (GSM), Management and Science University (MSU), No 4, University Drive, Off Jalan Persiaran Olahraga Seksyen 13, 40100 Shah Alam, Selangor – Malaysia. Email: alik@msu.edu.my

³Professor, Faculty of Business Management and Professional Studies (FBMP) - Graduate School of Management (GSM), Management and Science University (MSU), No 4, University Drive, Off Jalan Persiaran Olahraga Seksyen 13, 40100 Shah Alam, Selangor – Malaysia. Email: drferdous@msu.edu.my

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ABSTRACT

The Objective of this study is to examine the key socio-cognitive determinants and their effect on behavioural intention towards the actual usage of e-government services among working adults in Sri Lanka. In this study, the Theory of Planned Behavior (TPB) and Social Cognitive Theory (SCT) have been integrated to study the impact of attitude and self-efficacy on behavioural intention towards actual e-service usage. The hypothesis was tested through a covariance-based structural equation modeling (SEM) using Analysis of Moment Structure (AMOS) Version 23.0. The findings reveal that attitude and self-efficacy significantly influence behavioral intention, which strongly predicts actual usage. The results demonstrate that attitude and self-efficacy positively impact on e-government adoption directly and through behavioural intention. The study contributes to understanding the importance of cognitive determinants to enhance the successful adoption of e-government services in a developing country context.

Keywords: Cognitive Factors, Attitude, Self-Efficacy, Behavioural Intention, E-government adoption.

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1. INTRODUCTION

Modern technological advancement significantly impacts government interactions in providing services to citizens and other stakeholders¹⁻².

Government services delivered using new technology can gain benefits that differ from traditional delivery, such as increased citizen participation, improved efficiency, greater accessibility, and enhanced transparency³⁻⁴.

Consequently, the researchers point out that failure to adopt such technological developments can hinder progress in addressing development challenges; therefore, many developing countries are focusing on adopting e-government^{5,6}.

Sri Lanka, a developing country in the South Asian region, first officially launched e-government initiatives in 2002 through the e-Sri Lanka Project⁷.

Despite, these efforts, e-government performance in Sri Lanka is insufficient progress across key dimensions.⁸ Further researchers have emphasized that a stronger strategic focus is required to improve citizen-centric service delivery because users e-government adoption in Sri Lanka is not in a satisfactory level⁹.

Previous studies in the Sri Lankan context have examined factors such as political, social, technological, organizational, and environmental determinants of applications of e-government¹⁰⁻¹². Researchers have shown that psychological and behavioral factors play a very important role in adoption¹³⁻¹⁴.

Given the limited research on the role of cognitive and behavioral factors in this context, it appears that developing countries have only recently begun to examine the factors influencing e-government adoption¹⁵.

This study address existing practical and empirical gap by examining the impact of key socio-cognitive determinants, on behavioral intention towards actual usage of e-government services among working adults in Sri Lanka. Hence, this study may considerably contribute to the existing literature on e-government adoption in Sri Lankan context like in following ways. *Initially*, social- cognitive factors are paid conclusive attention rather than focusing on technological and institutional factors.

Secondly, the study examines developing a new model for understanding the actual use of e-government services combining the behavioral theories, namely the Theory of Planned Behavior (TPB) and Social Cognitive Theory (SCT).

Thirdly, both the direct and mediating effects of attitude and self-efficacy on the actual use of e-government services are invariably considered in order to socio-cognitive factors.

At the end, as TPB and SCT have not been conclusively utilized in examining e-government adoption in the Sri Lankan context, it is important to apply the above to retain the exceptionality of this research.

Accordingly, this research mainly focuses on addressing the following key research questions:

- *RQ1: What is the effect of attitude and self-efficacy on behavioural intention in Sri Lanka?*
- *RQ2: Does behavioural intention significantly influence the actual use of e-government services in Sri Lanka?*
- *RQ3: What is the effect of attitude and self-efficacy on the actual use of e-government services in Sri Lanka?*
- *RQ4: Does behavioural intention mediate the relationship between attitude and the actual use of e-government services in Sri Lanka?*
- *RQ5: Does behavioural intention mediate the relationship between self-efficacy and the actual use of e-government services in Sri Lanka?*

2. MATERIALS AND METHOD

2.1 E-government adoption

E-government can be considered as the use of digital information technology for information, communication, and transaction processes between government institutions and citizens¹⁶. E-government adoption is expected to deliver government services to citizens with increased efficiency, transparency, and participation¹⁷. Furthermore, e-government services improve the quality of public service by strengthening the relationship between citizens and the government, as documents and services can be easily accessed online¹⁸.

As per the Rehman et al. (2023), citizen participation is increased in adoption of e-government as e-government provides substantial benefits in

streamlining interactions between citizens and government institutions¹⁹.

Furthermore, it has been revealed that the success of e-government adoption largely depends on individual attitudes that influence user participation, and that psychological and behavioral factors may also be vital in adoption²⁰.

2.1.1 E-Government in Sri Lanka

Formally, the e-government initiatives in Sri Lanka came into operation with implementation of the e-Sri Lanka Project, launched by the Government in collaboration with the World Bank in 2002²¹.

This institutionalization which was identified as e-Sri Lanka Project, became the key pillar of national digital transformation²². Efficiency and transparency were the prime objectives in implementing this initiative creating a platform use ICT in public sector in the country. The aim of this application was manipulating ICT to improve the responsiveness and accessibility of government service delivery²³.

Subsequently, the Information and Communication Technology Agency (ICTA) was established through the ICTA Act of 2003 to create an institutional framework to implement and monitor the e-Sri Lanka Project.

Over the years, the ICTA has implemented several projects. In addition, various ministries and departments have implemented e-services at the national, provincial, and local government levels.

When comparing major e-government surveys, the United Nations E-Government Development Index (UNEGDI) indicates that the country was ranked 98th in 2024 and 95th in 2022²⁴⁻²⁵. More importantly, despite these extensive initiatives, the level of citizen adoption remains relatively low. Although nearly 495 government agencies operate official portals or websites and approximately 25 additional e-services have been developed for citizens and the public and private sectors, only a limited number of citizens actively use these services²⁶. Previous assessments indicate that approximately 13.5% of citizens have used some form of e-service provided by government agencies²⁷.

Furthermore, Hettiarachchi and Lakmal (2023) report that although about 70% of public institutions tend to agree with e-government initiatives and programmes, the overall utilization rate remains unsatisfactory²⁸.

In previous studies, researchers have shown that e-government initiatives in Third World countries require improved accessibility and enhanced citizens' ability to use them²⁹.

2.2. Research Model and Hypotheses Development

Theory of Planned Behavior (TPB): Icek Ajzen developed the TPB as an extension of Theory of

Reasoned Action (TRA) to incorporate perceived behavioral control in situations where individuals do

not have full voluntary control over their behavior [39-40]. According to Ajze(2011), In envisaging and explaining human social behavior, TPB is considered to be one of the most dominant theories³⁰⁻³¹. In predicting social behaviour, TPB is most effective prototype social cognitive approach³².

Social Cognitive Theory (SCT) introduced by Albert Bandura, is applied in the principle that cognitive, behavioral, and environmental factors interact to influence learning and human behavior³³. Bandura identified several core constructs essential to learning and behavioral regulation, including self-efficacy, self-regulation, and human agency and among these, self-efficacy plays a central role³⁴.

Attitude

Previous studies have reported that the factor of immediacy is a significant and positive predictor of behavioral intention in various technological adoption settings³⁵. Almani (2022), based on a study in the South Asian country of Pakistan, states that attitudes have a strong impact on individuals' intentions to use e-government services³⁶. This finding highlights the importance of examining how attitudes influence the adoption of e-services Based on these findings, the following hypothesis is proposed:

H1: *Attitude has a significant positive effect on behavioral intention*

Additionally, attitudes toward e-government adoption have a direct and significant impact on e-government adoption among government employees³⁷.

Therefore, the following hypothesis was formulated to examine whether attitudes toward e-government adoption directly influence e-government usage. Some studies suggest that Attitude (AT) may also have a direct effect on e-government services use. For example, Masadeh et al. (2024), in their study "Antecedents of User Attitude toward E-Government Services Use: Empirical Study on the Department of Lands and Survey", found a direct and significant relationship between user attitude and the actual use of e-services from the Department of Lands and Survey³⁸.

H2 : *Attitude has significant positive direct effect on the Actual Use of E-government services*

Self-Efficacy

According to Bandura (1986), Self-Efficacy (SE) can be considered as an individual's belief in their capability to organize and conduct the courses of

action required to achieve desired goals³⁹. It reflects a person's confidence is reflected ability to perform specific tasks successfully.

Within the context of technology adoption, self-efficacy can be considered significant in influencing behavioral intention and actual usage.

Alryalat et al. (2023) confirmed that manipulating e-government services, computer self-efficacy significantly and positively impact on the behavioural intention⁴⁰. Their findings indicate that individuals with higher computer SE tend to exhibit more favorable attitudes and stronger intentions toward using e-government services.

H3: *Self-efficacy has a significant positive effect on behavioural intention*

Further, Jeong and Jeong (2025) have recently examined on "Driving creativity in the AI-enhanced workplace: Roles of self-efficacy and transformational leadership"⁴¹. In their study they have shown that relationship between AI adoption and creative self-efficacy was stronger⁴². Further, Tang et al. (2024), understanding "the Impact of SE, Personal Innovativeness and Content Quality on Mobile Learning Usage in Higher Vocational Colleges", in their research have proved the study posited that SE, exert a direct influence on User Behaviour⁴³.

H4: *Self-efficacy has a significant positive effect on the Actual Use of E-government services Behavioral Intention and Actual Use of E-government services*

The strength of a person's desire to perform is dependent on Behavioral Intention (BI). An intention can be described as a drive to behave in a particular mode, while behavior is actual action taken. Research has shown that actual use is associated with future uses of the technology or system and, therefore, is involved in a successful adoption process⁴⁴. Therefore, the following hypothesis has been formulated to test the relationship between BI and actual use of e-government services.

H5: *Behavioural intention has a significant positive effect on the Actual Use of E-government services*

Mediating Effect Hypotheses

H6: *Behavioural intention mediates the relationship between attitude and Actual Use of E-government services*

H7: *Behavioural intention mediates the relationship between self-efficacy and Actual Use of E-government services*

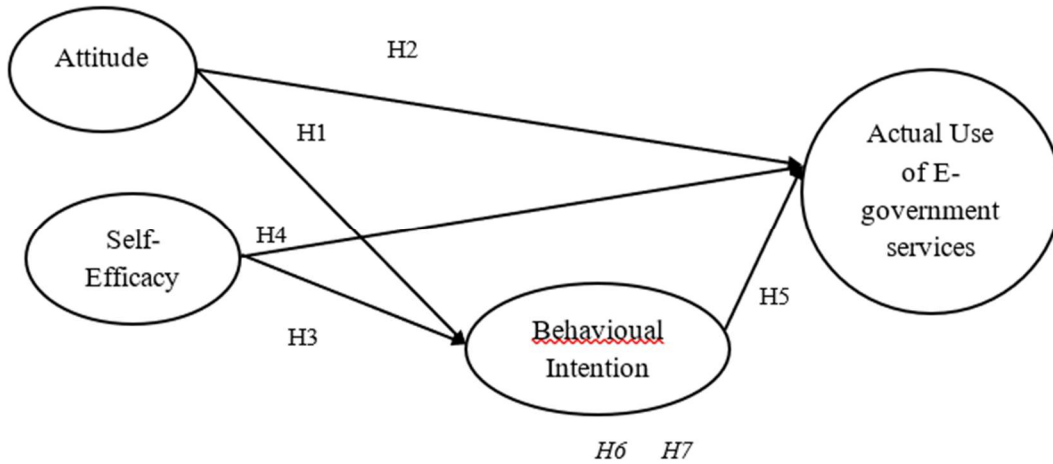


Figure 1. Proposed model for the study.

2.3 Research methodology

2.3.1 Research Design and Data Collection

This study employed a quantitative cross-sectional research design using a structured survey questionnaire to collect data. A multi-stage sampling method was adopted in this study. In the first stage, proportional stratified sampling was used to allocate the sample size across the 25 districts of Sri Lanka based on the employed population. In the second stage, convenience sampling was used to select working adults with e-government experience. The

present study targeted working adults across all 25 administrative districts of Sri Lanka. Initially, 670 questionnaires were distributed using multiple modes, including Google Forms, email, WhatsApp and face-to-face distribution. A total of 448 valid responses were received. For hypothesis testing, only responses from individuals who had experience using e – government services were included, resulting in a final usable sample size of 448.

2.3.2 Measurement Items

The main constructs examined in this study were Self-Efficacy (SE), Attitude (AT), Behavioral Intention (BI), and Actual use of E-Government Use (E-GOV). These constructs were selected based on established theories of technology acceptance and adoption. The measurement items for each construct were adapted from previously validated empirical studies to ensure reliability and validity. The specific sources from which each item was derived are presented in Table 1. All items were measured using a five-point Likert-type scale ranging from “strongly disagree” to “strongly agree.” The measurement items were adapted from

validated instruments used in previous empirical studies on e-government adoption (Table:1).

Table 1. Number of measurement items adapted for each construct

Variable	Number of Items	Adapted
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Attitude (AT)	7	Alhadid et al. (2022); Mensah et al. (2020); Pusparini et al. (2024); Ivanov et al. (2024); Alyoussef (2021)
Self-efficacy (SE)	5	Zaman et al, 2021
Behavioural Intention (BI)	8	Assegaff (2023); Alawadhi (2022); Kanaan et al. (2022); Senshaw & Twinomurinzi (2021); Kamarudin (2021); Elkhatibi et al. (2024); Kamali (2018)
Actual Use of E-Government services(E-GOV)	10	Tabassum & Siddiqui (2023); Ahmad et al. (2024); Kim et al. (2024); Assegaff et al. (2023); Al-Mamary et al. (2024); Mamary et al. (2024)

3.RESULTS AND DISCUSSION

3.1 Results

3.1.1 Sample Profile

As mentioned earlier, working adults in Sri Lanka were proportionally selected from all 25 districts of the country. According to demographic and statistical data, the highest employed population was reported in the Colombo District, followed by Gampaha and Kurunegala districts, while the lowest employed populations were observed in Mannar, Mullaitivu, and Vavuniya districts.

The descriptive statistics of the sample showed that 50.0% of the respondents were male, 49.8% were female, and 0.2% identified as other. The largest age group consisted of respondents between 31 and 40 years, accounting for 34.2% of the sample, followed by those aged 21 to 30 years, representing 28.8% of the respondents. The majority of respondents were married (60.9%) among the selected working adults. The findings further reveal that the highest usage of e-government services was reported among public sector employees (58%). The remaining categories include private sector employees (26.8%), employers (5.8%), own-account workers (6.7%), and unpaid family workers (2.7%).

The initial CFA results (Figure2) indicated a Chi-square to degrees of freedom ratio (χ^2/df) of 3.411 and a CFI of 0.930, suggesting acceptable model. The Root Mean Square Error of Approximation (RMSEA) value was also above the recommended threshold. According to established guidelines, a good model fit is indicated by χ^2/df values below 3.0, CFI values above 0.90, and RMSEA values below 0.08⁴⁵. The

In terms of education, most working adults were graduates (33.5%), followed by those with high school education (25.9%), diplomas (21.2%), and postgraduate qualifications (19.4%).

Additionally, 87.7% of the respondents had been using internet facilities for more than five years.

3.1.2 Measurement model

In this study, Cronbach’s alpha values ranged from 0.70 to 0.86 indicating a satisfactory to high level of internal consistency among the constructs. Convergent validity was evaluated using Composite Reliability (CR) and Average Variance Extracted (AVE). According to Fornell and Larcker (1981), CR values should exceed 0.70 and AVE values should exceed 0.50 to ensure adequate convergent validity⁴⁴.

The results indicated (Table 2) that all constructs met these recommended thresholds, confirming satisfactory convergent validity.

Furthermore, EFA was conducted using (SPSS) (Version 25.0) SPSS. Factor loadings were examined through the Component Matrix and Rotated Component Matrix. Items with low factor loadings were removed to improve the measurement model.

The initial model demonstrated an acceptable level of fit; however, further modifications were made to improve the model. Accordingly, the revised model showed improved fit indices, with $\chi^2/df = 2.549$, CFI = 0.956, and RMSEA = 0.059. These results indicate that the modified model achieved a good fit to the data (Figure 3).

Table 2. Composite reliability, convergent and discriminant validity

Construct	Items	Standard Loadings	Cronbach’s Alpha	CR	AVE	
Attitude (AT)	AT1	.849	.911	0.926	0.678	
	AT2	-				Removed
	AT3	.900				
	AT4	.791				

	AT5	.867			
	AT6	.848			
	AT7	.875			
Self -Efficacy (SE)	SE1	.878	.930	0.930	0.728
	SE2	.910			
	SE3	.921			
	SE4	.887			
	SE5	.833			
Behavioural Intention (BI)	BI1	.872	.959	0.956	0.732
	BI 2	.901			
	BI 3	.896			
	BI 4	.881			
	BI 5	.898			
	BI 6	.897			
	BI 7	.882			
	BI 8	.882			
Actual Use of E-Government Services (EGOV)	E-GOV1	.746	.920	0.921	0.570
	E-GOV2	-Removed			
	E-GOV3	.681			
	E-GOV4	.842			
	E-GOV5	.734			
	E-GOV6	.841			
	E-GOV7	.701			
	E-GOV8	.886			
	E-GOV9	.862			
	E-GOV10	.741			

3.1.3 Results of the Measurement Model

Furthermore, Cronbach’s alpha coefficient was used to access the internal consistency of the measurement instruments. The Cronbach’s alpha values (Table 2) were all above 0.70, indicating that the constructs used in this study demonstrate satisfactory reliability.

Moreover, construct reliability and convergent validity were assessed through CR and AVE. Seemingly, the values of AVE for all constructs surpassed the suggested threshold value of 0.50, as recommended by Fornell and Larcker (1981), confirming adequate convergent validity. Similarly, the CR values (Table 2) were all above the minimum acceptable level of 0.70, further supporting the reliability of the constructs. Discriminant validity was initially assessed using the Fornell–Larcker criterion. The results indicated that the square root of the AVE for certain constructs, particularly *attitude* and *e-*

government adoption, was lower than their correlations with *behavioral intention*, suggesting potential issues with discriminant validity. However, recent methodological literature recommends the Heterotrait–Monotrait (HTMT) ratio as a more vigorous standard for assessing discriminant validity. According to established guidelines, HTMT values below 0.85 indicate adequate discriminant validity. In this study, HTMT values ranged from 0.599 to 0.755, all of which are below the recommended threshold (Table 3). Therefore, discriminant validity is considered to be established despite the limitations observed in the Fornell–Larcker assessment. This finding is consistent with recent studies, which argue that the Fornell–Larcker criterion may not reliably detect discriminant validity issues, and that the HTMT ratio provides a more accurate assessment⁴⁶.

Table 3 .Discriminant validity -Heterotrait-Monotrait Ratio (HTMT)

	Actual use of Government(E-GOV) Services	Behavioural Intention(BI)	Self-Efficacy(SE)	Attitude(AT)

Actual use of Government Services(E-GOV)				
Behavioural Intention(BI)	0.7551			
Self-Efficacy(SE)	0.5985	0.6468		
Attitude(AT)	0.6998	0.7553	0.6000	

3.1.4 Structural Model Analysis

In this research, SEM was conducted using AMOS to test the hypothesized relationships among AT, SE, BI, and E-GOV (Figure 4). By manipulating standardized

path coefficients (β), Standard Errors (SE), Critical Ratios (CR), and p-values, the significance of the structural model relationships were assessed.

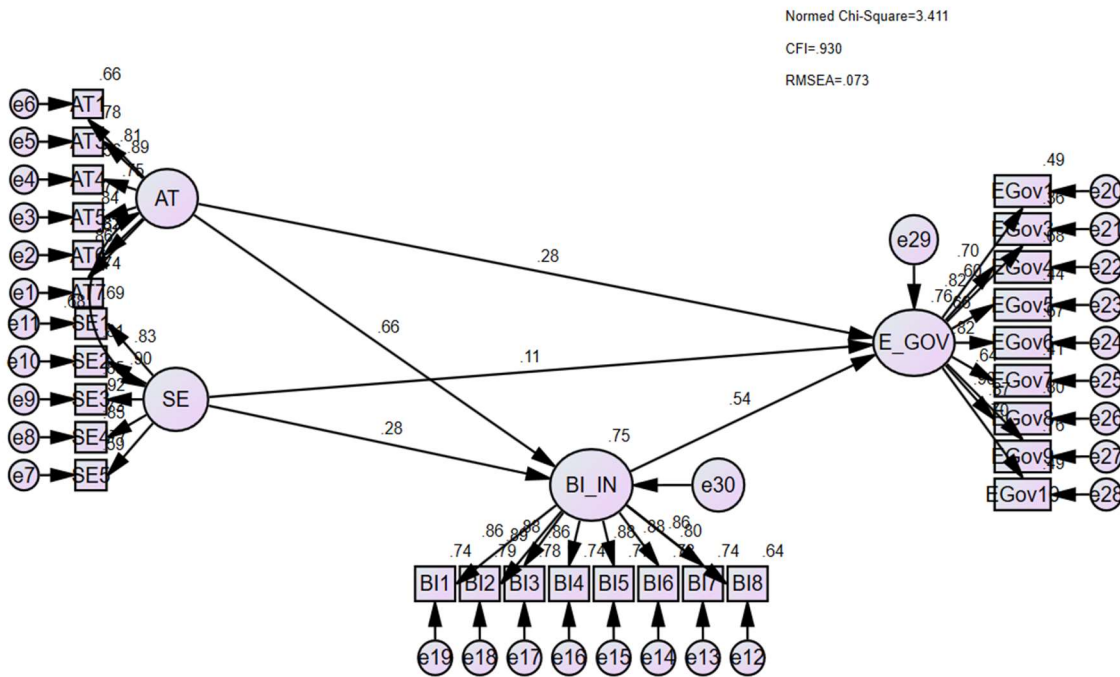


Figure 4: Structural Model Analysis

3.1.5 Testing effect of hypothesis

Table 4. Hypothesis testing results

Hypothesis	Beta(β)	t-value	p-value	Meaning
H1: AT → BI	0.618	13.181	***	Significant
H2: AT → E-GOV	0.204	4.248	***	Significant
H3: SE → BI	0.263	6.136	***	Significant
H4: SE → E-GOV	0.085	2.435	0.015	Significant
H5: BI → E-GOV	0.442	7.487	***	Significant

Note: β (Beta) = Standardized regression weight (Estimate)

t-value (C.R.) = Critical Ratio from AMOS

**** indicates $p < 0.001$ (highly significant)**

The findings indicate (Table 4) that AT has a positive and statistically significant effect on BI ($\beta = 0.618, t = 13.181, p < 0.001$). The high t-value and significance level confirm that AT is a strong predictor of BI. Therefore, H1 is supported.

AT also shows a positive and statistically significant direct effect on E-GOV ($\beta = 0.204, t = 4.248, p < 0.001$). This result indicates that, in addition to influencing intention, AT directly contributes to actual usage behavior. Thus, H2 is supported.

SE demonstrates a positive and statistically significant effect on BI ($\beta = 0.263, t = 6.136, p < 0.001$). Although the magnitude of this effect is smaller than that of AT, the relationship remains significant. This finding is consistent with SCT, which emphasizes the role of SE in shaping individual intentions and behaviors. Hence, H3 is supported.

Furthermore, SE has a positive and statistically significant direct effect on E-GOV ($\beta = 0.085, t = 2.435, p = 0.015$). Although this effect is relatively weak compared to other relationships, it is still statistically significant. Therefore, H4 is supported.

Finally, BI has a strong and statistically significant effect on E-GOV ($\beta = 0.442, t = 7.487, p < 0.001$). The magnitude of this coefficient indicates that BI is a substantial predictor of E-GOV. Accordingly, H5 is supported.

A bootstrapping procedure with 5,000 resamples and a no sign-change option was employed to examine the stability and significance of the path coefficients. Table 4 presents the structural model estimates and the evaluation of the proposed hypotheses based on the AMOS results.

Table 5. Indirect Effects (Bootstrapping Results)

Hypothesis	Indirect effect Beta(β)	Lower Bound	Upper Bound	Significance
H6: AT → BI → E_GOV	0.271	0.163	0.423	Significant
H7: SE → BI → E_GOV	0.118	0.056	0.202	Significant

Note: β (Beta)

The bootstrapping results show (Table 5) that the indirect effects are significant. The lower and upper bounds for attitude are 0.163 and 0.423, respectively, while for self-efficacy, the lower and upper bounds are 0.056 and 0.202, respectively. Accordingly, it is confirmed that behavioral intention plays a mediating role between attitude and actual use of e-government services, as well as between self-efficacy and actual use of e-government services. Therefore, hypotheses H6 and H7 are supported, indicating that behavioral intention significantly mediates the relationships between attitude and actual use of e-government services and between self-efficacy and actual use of e-government services.

3.2 Discussion

This study contributes to the existing body of knowledge by identifying the factors that influence individuals' intentions to use e-government services from theoretical, practical, and empirical perspectives. The model integrates cognitive factors and attitudes in explaining behavioral intention, drawing on both TPB and SCT to explain e-government adoption. Accordingly, this study plays a significant role in identifying the determinants of citizens' adoption of e-government services.

A mediation analysis was conducted to determine the type of mediation present in the model. Out of the

seven proposed hypotheses, two key mediation hypotheses were tested. First, behavioral intention mediates the relationship between attitude and actual e-government use. Second, behavioral intention mediates the relationship between self-efficacy and actual e-government use.

The structural model was evaluated to examine both direct and indirect relationships among self-efficacy, attitude, behavioral intention, and e-government adoption. Either directly or indirectly through behavioral intention, the findings demonstrated that both attitude and self-efficacy significantly influence actual e-government use. Between behavioral intention and actual e-government use direct considerable effect ($\beta = 0.442$) was observed.

Furthermore, AT ($\beta = 0.273$) and SE ($\beta = 0.116$) demonstrate positive indirect effects on actual e-government use through behavioral intention. These findings extend beyond previously established causal relationships. Consistent with prior research, attitude is identified as a strong determinant of behavioral intention, supporting the assumptions of the TPB (Ajzen, 1991). Additionally, in line with Bandura's SCT, individual capability (SE) is shown to influence behavioral intention, which is also applicable in the Sri Lankan context.

The results further reveal that the indirect effects are greater in magnitude than the direct effects, indicating that behavioral intention functions as a mediating variable in the relationships between AT, SE, and actual e-government use. In terms of total effects, attitude has a substantial influence on actual e-government use ($\beta = 0.477$), whereas self-efficacy ($\beta = 0.202$) plays a comparatively smaller role.

The mediation analysis using bootstrapping revealed that behavioral intention plays a critical mediating role in the relationship between psychological factors and e-government adoption. Specifically, significant indirect effects were found for attitude ($\beta = 0.271$, CI [0.163, 0.423]) and self-efficacy ($\beta = 0.118$, CI [0.056, 0.202]) through behavioral intention. These findings further confirm that psychological factors have a significant impact on e-government adoption.

Overall, the findings confirm that both the direct and indirect paths from attitude and self-efficacy to e-government adoption are statistically significant, supporting the presence of partial mediation. This suggests that behavioral intention serves as a key mechanism through which these factors influence adoption, while attitude and self-efficacy also exert independent effects on actual usage behavior. The results indicate that e-government adoption in Sri Lanka is gradually increasing, with working adults recognizing e-government services as useful and preferable to traditional methods.

The findings confirm that attitude and self-efficacy significantly influence behavioral intention, which in turn affects actual usage of e-government services.

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Behavioral intention was identified as a key mediating factor, while both attitude and self-efficacy also demonstrated direct effects on usage, highlighting a notable contribution to existing literature. From a practical perspective, the study emphasizes the importance of enhancing user perceptions, user behaviour and their intention, and confidence to increase adoption levels. At the policy level, the findings suggest that successful e-government implementation requires not only technological development but also a strong focus on user engagement and cognitive factors.

Overall, this study provides valuable theoretical and practical insights for improving e-government adoption in developing country contexts such as Sri Lanka.

4. CONCLUSION

This study investigated the role of socio-cognitive determinants in influencing e-government adoption in Sri Lanka. The findings confirm that both AT and SE significantly influence BI, which in turn has a strong positive effect on the actual usage of e-government services. Among the factors, behavioral intention was identified as the most influential predictor and a key mediating variable, while attitude and self-efficacy also demonstrated direct effects on actual usage. Overall, the findings indicate that all factors have a positive impact on the adoption of e-government services. This research provides valuable insights for promoting citizen-centric e-government adoption in developing countries such as Sri Lanka.

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