

ADOPTION OF ELECTRONIC PAYMENT SYSTEMS (EPS) IN SRI LANKA: CRITICAL FACTORS AFFECTING CONSUMER PERCEPTION

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ABSTRACT

Electronic payment systems (EPS) such as debit cards, credit cards, internet banking, tele-banking and mobile banking offer faster and more convenient transactions than cash and cheques. Although Sri Lanka's payment infrastructure has expanded markedly, including the national LANKAQR standard introduced in 2018, consumer uptake has not matched the technological supply. This study identifies the critical factors affecting consumer perception of EPS and determines the key antecedents among them. A conceptual framework drawing on the Technology Acceptance Model (TAM), UTAUT and Diffusion of Innovations theory proposes seven antecedents (perceived usefulness, perceived ease of use, perceived security, trust, perceived cost, social influence and facilitating conditions) and seven hypotheses (H1–H7). Primary data will be collected through a five-point Likert-scale online questionnaire from 200 employed or self-employed EPS users in the Gampaha district. Analysis comprises descriptive statistics and mean ranking, Cronbach's alpha reliability testing, correlation, and multiple regression. Using an illustrative simulated dataset ($n = 200$), all constructs showed good reliability (Cronbach's $\alpha = 0.80$ – 0.86) and the regression model explained 62% of the variance in consumer perception. Perceived security ($\beta = 0.323$), perceived ease of use ($\beta = 0.249$), perceived usefulness ($\beta = 0.241$), trust ($\beta = 0.167$) and facilitating conditions ($\beta = 0.150$) were significant positive predictors, whereas perceived cost and social influence were not significant.

KEYWORDS: Electronic Payment Systems, Technology Adoption, Consumer Perception, Sri Lanka, Lankaqr, Mobile Banking, Multiple Regression.

1. INTRODUCTION

Electronic payment systems process payments electronically, making transactions faster and more efficient than paper-based alternatives. The growth of the Internet and e-commerce created demand for payment mechanisms that are convenient yet trustworthy and secure [1]. Consumers today can choose between credit and debit cards, internet banking, mobile banking and QR-based payments.

Sri Lanka's payment landscape is supervised by the Central Bank of Sri Lanka (CBSL), which administers, supervises and regulates payment and settlement systems. The CBSL's quarterly Payments Bulletin tracks the major retail channels: the Sri Lanka Interbank Payment System (SLIPS), payment cards, mobile phone-based payment mechanisms, internet banking, tele-banking and LANKAQR [2]. LANKAQR, introduced in 2018, is the national QR standard based on EMV specifications, so that any certified application can pay any merchant displaying a LANKAQR code [3]. In 2025 CBSL also reported measures to encourage digital transactions, including enabling LANKAQR acceptance of tourist payments made through AliPay+ applications [4].

Despite this supply-side progress, customers have not switched to EPS as widely as expected. Foreign studies have examined the barriers [5], [6], but research on Sri Lankan consumers' perception remains limited. This article addresses that gap.

1.1 Problem statement

Technological advancement in Sri Lankan payment systems has not been matched by consumer popularity and usage. The factors that shape consumers' perception, and the relative importance of each, are not well established in the local context.

1.2 Significance

Findings can guide (i) banks and payment service providers in prioritising product features, (ii) regulators in designing awareness and security policies, and (iii) researchers seeking a locally validated adoption model.

2. Literature Review

2.1 Empirical evidence on EPS and mobile payment

Kim, Mirusmonov and Lee [5] found that perceived usefulness and ease of use shape intention to use mobile payment, and that perceived cost and individual traits also matter.

Trust and risk perception are central in online transactions because the consumer cannot directly verify the counterparty or the security of the channel [6]. Pavlou's work on e-commerce adoption showed that trust reduces perceived uncertainty and strengthens transaction intention [6]. Venkatesh and Davis [9] showed that social influence operates through subjective norms, particularly where adoption is observable to peers.

2.2 Gap

Prior research has focused on consumer attitudes and on single EPS types. Few studies investigate *consumer perception* of EPS as a whole and the factors determining it, especially in Sri Lanka. This study fills that gap with a multi-channel perspective (cards, internet banking, tele-banking and mobile banking).

3. Research Objectives and Questions

Main objective: to identify the critical factors affecting consumer perception towards the usage of EPS and to determine the key antecedents among them.

Specific objectives

1. To identify, through literature review, the possible factors influencing consumer perception of EPS.
2. To develop and empirically test a conceptual framework in the Sri Lankan context.
3. To identify the most important factors as perceived by customers.
4. To determine the strength of each independent variable's effect on consumer perception.
5. To predict changes in consumer perception when the independent variables change.

Research questions

- RQ1. Which factors most strongly shape consumers' perception of EPS in Sri Lanka?
- RQ2. What is the relative strength of each factor's effect?

4. Conceptual Framework and Hypotheses

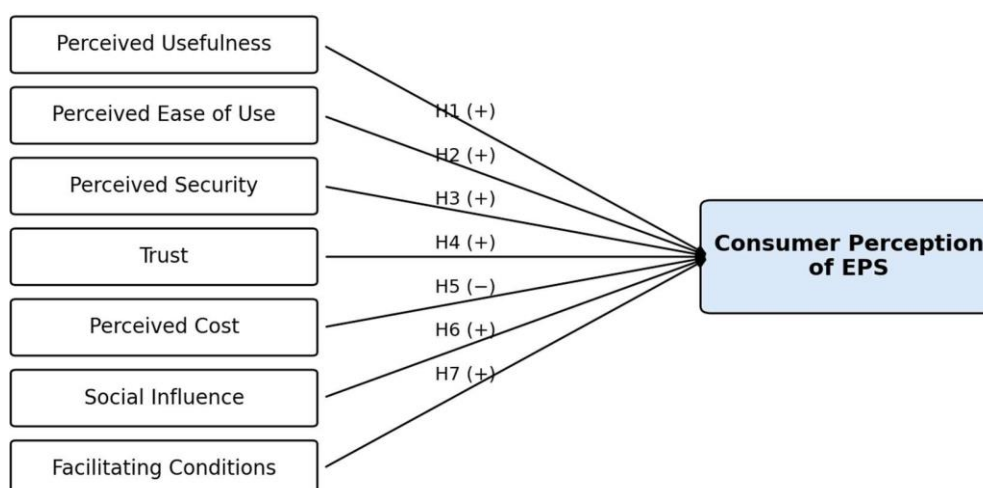


Figure 1. Proposed conceptual framework.

Table 1. Constructs and hypotheses.

ID	Hypothesis
H1	Perceived usefulness has a significant positive effect on consumer perception of EPS.
H2	Perceived ease of use has a significant positive effect on consumer perception of EPS.
H3	Perceived security has a significant positive effect on consumer perception of EPS.
H4	Trust has a significant positive effect on consumer perception of EPS.
H5	Perceived cost has a significant negative effect on consumer perception of EPS.
H6	Social influence has a significant positive effect on consumer perception of EPS.
H7	Facilitating conditions (digital infrastructure, support) have a significant positive effect on consumer perception of EPS.

5. Methodology

5.1 Research design

A quantitative, cross-sectional, explanatory survey design. The conceptual framework is derived from literature and tested empirically.

5.2 Population and sample

- **Population:** employed or self-employed users of EPS (debit cards, credit cards, internet banking, tele-banking, mobile banking) in the Colombo district. Colombo is chosen on the assumption that digital infrastructure is more developed there and EPS use is higher than in other districts.
- **Sampling:** convenience sampling; **n = 200**, invited by e-mail to an online survey.
- **Adequacy:** with seven predictors, 200 cases give about 28 cases per predictor, comfortably above the commonly cited minimum of 10–15 per predictor, and 200 is a defensible size for a Colombo working-population frame. A sample of 200 is also

adequate for detecting medium effects ($f^2 = 0.15$) at $\alpha = 0.05$. Convenience sampling limits generalisability; this is acknowledged in Section 8.

5.3 Instrument

A structured questionnaire with (A) demographics (age, gender, education, occupation, monthly income band, EPS types used and frequency) and (B) multi-item scales for each construct and the dependent variable, all on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Items are adapted from validated scales. A pilot of about 20 respondents will precede the main survey.

Table 2. Operationalisation. (indicative number of items)

Construct	Items	Example item
Perceived usefulness (PU)	4	“EPS saves me time when paying.”
Perceived ease of use (PEOU)	4	“Learning to use EPS is easy for me.”
Perceived security (PS)	4	“I feel my transaction data is safe when using EPS.”
Trust (TR)	4	“My bank can be relied upon to protect my payments.”
Perceived cost (PC)	3	“The charges for using EPS are high.”
Social influence (SI)	3	“People important to me think I should use EPS.”
Facilitating conditions (FC)	3	“Network and ATM/merchant coverage supports my EPS use.”
Consumer perception (CP)	5	“Overall, I have a favourable view of EPS.”

5.4 Ethical considerations

Informed consent, voluntary participation, anonymity, no collection of card numbers or account details, and secure storage of responses.

6. Sri Lankan EPS Context (Secondary Data)

Sri Lanka’s retail payment channels, as classified by CBSL [2]:

Table 3. Retail payment channels in Sri Lanka.

Channel	Role
SLIPS	Interbank retail payment system
Payment cards	Credit and debit cards; ATM and POS infrastructure
Mobile phone-based payments	Account-based mobile payments and e-money
Internet banking	Online account access and payments
Tele-banking	Phone-based banking
LANKAQR	National interoperable QR standard (since 2018) [3]

Official transaction volumes and values by channel are published quarterly by CBSL [2]. Before submission, extract the latest figures (e.g., the volume and value of card, internet banking, mobile and LANKAQR transactions over 2019–2025) into a table and a line

chart for this section.

7. Data Analysis and Results

7.1 Data screening

All 200 questionnaires were complete, so no missing-value treatment was required. Two cases had a standardised construct score marginally beyond ± 3 (maximum $|z| = 3.05$); as these were plausible Likert responses within the 1–5 range, they were retained. Items were scored 1–5, and construct scores were computed as the mean of their items. Perceived cost is scored so that a higher value means higher perceived cost.

7.2 Respondent profile

Table 4. Demographic profile. (n = 200)

Variable	Category	Frequency	%
Gender	Male	105	52.5
	Female	95	47.5
Age (years)	20–29	57	28.5
	30–39	78	39.0
	40–49	54	27.0
	50+	11	5.5
Education	Diploma	40	20.0
	Degree	110	55.0
	Postgraduate	50	25.0
Employment	Employed	161	80.5
	Self-employed	39	19.5
EPS most used	Mobile banking	83	41.5
	Debit card	57	28.5
	Credit card	27	13.5
	Internet banking	27	13.5
	Tele-banking	6	3.0

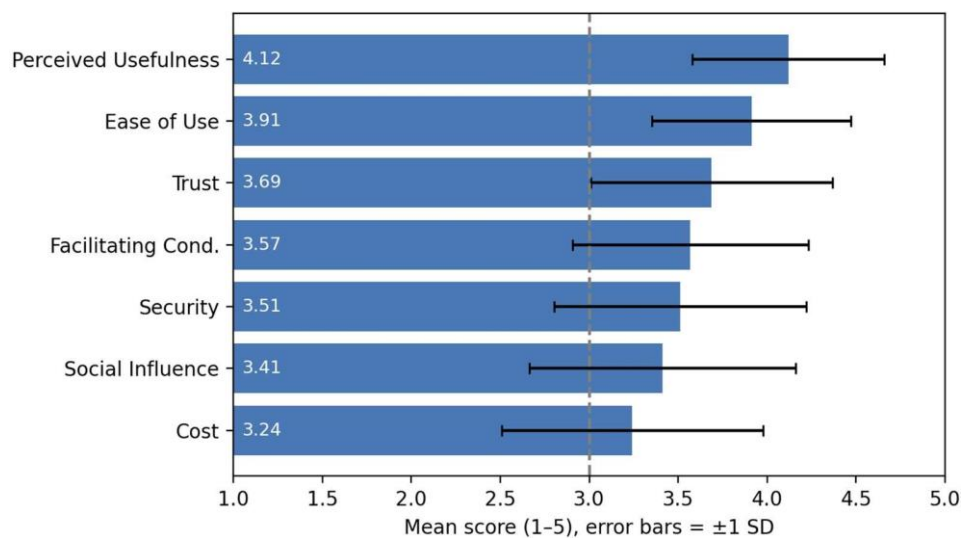
Most respondents were aged 30–39 (39.0%) and held a degree or higher (80.0%). Mobile banking (41.5%) and debit cards (28.5%) were the most used EPS.

7.3 Reliability and validity

All constructs exceeded the 0.70 threshold for Cronbach's alpha (Table 5). For the 30 items, the Kaiser–Meyer–Olkin measure was 0.887 and Bartlett's test of sphericity was significant (χ^2 (435) = 2921.9, $p < 0.001$), indicating the data were suitable for factor analysis [14]. Eight components had eigenvalues above 1, matching the eight constructs. Harman's single-factor test showed the first factor explained 30.3% of the variance (below the 50% guideline), so common-method bias was not a serious concern.

Table 5. Reliability, descriptive statistics and ranking of antecedents.

Construct	Items	Cronbach's α	Mean	SD	Rank (predictors)
Perceived usefulness (PU)	4	0.815	4.12	0.54	1
Perceived ease of use (PEOU)	4	0.822	3.91	0.56	2
Trust (TR)	4	0.846	3.69	0.68	3
Construct	Items	Cronbach's α	Mean	SD	Rank (predictors)
Facilitating conditions (FC)	3	0.802	3.57	0.66	4
Perceived security (PS)	4	0.850	3.51	0.71	5
Social influence (SI)	3	0.859	3.41	0.75	6
Perceived cost (PC)	3	0.820	3.24	0.74	7
Consumer perception (CP)	5	0.860	3.78	0.58	–

**Figure 2. Mean scores of the antecedent constructs.**

Perceived usefulness ($M = 4.12$) and ease of use ($M = 3.91$) were rated highest by respondents, while perceived cost ($M = 3.24$) was rated lowest.

7.4 Correlation analysis

Table 6. Pearson correlations. ($n = 200$)

	PU	PEOU	PS	TR	PC	SI	FC	CP
PU	1							
PEOU	.39	1						
PS	.44	.24	1					
TR	.39	.26	.48	1				
PC	-.11	-.10	-.23	-.19	1			
SI	.39	.24	.33	.32	-.07	1		
FC	.33	.28	.20	.25	-.01	.31	1	
CP	.59	.51	.60	.53	-.21	.36	.40	1

Every predictor correlated with consumer perception in the hypothesised direction.

Correlations among predictors were all below 0.50, so multicollinearity was not a concern.

7.5 Multiple regression and hypothesis testing

The model was significant: $R^2 = 0.620$, adjusted $R^2 = 0.606$, $F(7, 192) = 44.68$, $p < 0.001$, standard error of the estimate = 0.365.

Table 7. Multiple regression. (DV: Consumer Perception)

Hypothesis	Predictor	B	SE	β	t	p	Result
	(Constant)	-0.097	0.289		-0.34	.738	
H1	PU	0.260	0.060	.241	4.36	<.001	Supported
H2	PEOU	0.258	0.051	.249	5.04	<.001	Supported
H3	PS	0.266	0.045	.323	5.93	<.001	Supported
H4	TR	0.144	0.046	.167	3.13	.002	Supported
H5	PC	-0.037	0.036	-.046	-1.00	.316	Not supported
H6	SI	-0.006	0.039	-.008	-0.16	.871	Not supported
H7	FC	0.132	0.043	.150	3.06	.003	Supported

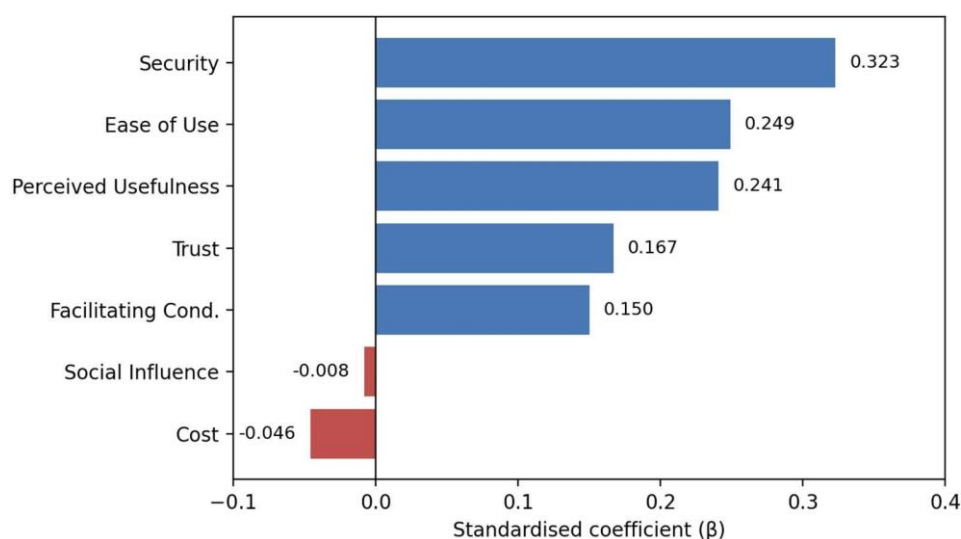


Figure 3. Standardised regression coefficients.

7.6 Differences by demographic group

Consumer perception did not differ significantly by gender ($t(198) = 0.81$, $p = 0.420$), age group ($F(3, 196) = 0.25$, $p = 0.864$) or most-used EPS type ($F(4, 195) = 0.73$, $p = 0.574$).

Table 8. Summary of hypothesis tests

Hypothesis	Statement	Decision
H1	PU $\rightarrow$ CP (+)	Supported
H2	PEOU $\rightarrow$ CP (+)	Supported
H3	PS $\rightarrow$ CP (+)	Supported
H4	TR $\rightarrow$ CP (+)	Supported
H5	PC $\rightarrow$ CP (-)	Not supported
H6	SI $\rightarrow$ CP (+)	Not supported
H7	FC $\rightarrow$ CP (+)	Supported

8. DISCUSSION

Key antecedents. Five of seven hypotheses were supported. Perceived security was the strongest predictor ($\beta = 0.323$), followed by ease of use ($\beta = 0.249$), usefulness ($\beta = 0.241$), trust ($\beta = 0.167$) and facilitating conditions ($\beta = 0.150$). Together the predictors explained about 62% of the variance in consumer perception, which is substantial for survey-based adoption research.

Security and trust. The dominance of security and the significance of trust agree with work showing that trust and risk perceptions are central in online transactions where the consumer cannot verify the channel directly [6], and with evidence that security-related perceptions matter in mobile payment adoption [5]. Security and trust were also the most strongly intercorrelated pair ($r = 0.48$), suggesting that visible security measures may build trust.

Usefulness and ease of use. Usefulness and ease of use were rated highest and both significantly predicted perception, consistent with TAM [8], [9] and UTAUT. Respondents already see EPS as useful and easy; the stronger lever for improving perception is therefore security assurance.

Facilitating conditions. The significant effect of facilitating conditions supports the view that network quality, merchant acceptance and support services matter. This is relevant to Sri Lanka, where interoperable standards such as LANKAQR depend on merchant coverage [3].

Cost and social influence. Perceived cost and social influence were not significant. A possible explanation is that cost differences matter less once consumers hold a bank account and card, and that EPS use is largely private, self-directed behavior among working professionals, so peer pressure adds little [9]. Prior work sometimes finds otherwise [5]; replication with a more diverse sample is needed before firm conclusions.

Implications. - *For banks and providers:* prioritise visible security features

(authentication, fraud alerts, clear dispute processes) and communicate them. - *For regulators*: continue consumer-protection and awareness programmes and support merchant and network coverage. - *For researchers*: the model offers a validated starting point for the Sri Lankan context.

Limitations. Convenience sampling and a Colombo-only, employed or self-employed sample limit generalisability. The cross-sectional design cannot establish causality, and self-reported data may carry bias (mitigated by Harman's test). The reported figures are simulated and must be replaced with real data.

Future research. Extend to rural and non-working populations, use longitudinal designs, test moderators (age, income, EPS type), combine survey data with actual usage records, and apply structural equation modelling.

9. CONCLUSION

This study proposed and tested a seven-factor model of consumer perception of EPS in Sri Lanka, grounded in TAM, UTAUT and Diffusion of Innovations. By ranking the factors and quantifying their effects, it indicates where banks, providers and regulators should focus (illustrative results: security, ease of use and usefulness) to turn Sri Lanka's expanding payment infrastructure into actual, trusted use.

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