# ANALYSIS ON CASHLESS PAYMENT SYSTEM ADOPTION IN PUBLIC TRANSPORT IN SRI LANKA

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**(Specialized in Business Analytics)**

**Department of Computer Science and Engineering**

**University of Moratuwa, Sri Lanka**

**May, 2020**

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**Department of Computer Science and Engineering**

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# DECLARATION

This is to certify that to the best of my knowledge, the content of this thesis is my own work. This thesis has not been submitted for any other degree or other purpose. I certify that the intellectual content of this thesis is the product of my own work and that all the assistance received in preparing this and sources have been acknowledged.

25th May 2020

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Date Deshapriya Noyel Kumara Medawatta

(Candidate)

The above candidate has carried out research for the Masters Dissertation under my supervision.

25th May 2020

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# ABSTRACT

Use of cashless payment for purchasing transit tickets is a timely requirement in Sri Lanka. So far, many attempts have been made to introduce cashless payment systems to the public transport sector in Sri Lanka. However, none of them managed to achieve the intended objectives. Therefore, this study aims to analyze passengers' adoption of cashless payments within the public transport sector in Sri Lanka. In this case, deterministic factors that are assessed by passengers to decide whether to use or not to use cashless payment are analyzed.

The research was conducted as an applied, correlational and deductive research. Convenient sampling technique was used to collect survey responses of 404 participants representing the public transport passenger population in Sri Lanka. The data collection was conducted as a self-administered online survey and the collected data set was analyzed using quantitative techniques. Deterministic factors used by public transport passengers were identified from related literature and based on them 10 hypotheses were proposed. Factor analysis and hypothesis testing was done using Partial Least Squares-Structural Equation Modeling (PLS-SEM) technique. Data analysis was supported by IBM SPSS 25 and SmartPLS software tools.

Based on the constructs and hypotheses proposed by this research, a model was developed to describe the cashless payment adoption in the public transport sector in Sri Lanka. However, the explanation power of the model was limited to 34%. According to research outcomes, it was revealed that 69% of the variance of passenger's intention to use cashless payments is determined by passenger's attitude toward the use of it. In addition to that it was revealed that the passenger's attitude is directly influenced by the passenger's perception about the usefulness of the cashless payment alternative than by the perception about the ease of use of the payment method. However, passenger's perception about the ease of use of cashless payments can influence passenger's attitude indirectly. Also, it was empirically proven that subjective norms have no direct impact on passenger's attitude toward the use of cashless payments. But still subjective norms can have an impact on passenger's perception about the ease of use and their intention to use cashless payments within the public transport sector in Sri Lanka.



Keywords: Cashless Payments, Mobile Payments, NFC Payments, Automated Fare Collection, Cashless Transit Ticket Payments, Structural Equation Modeling.

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| | | |
|---|---|---|
| AVE | - | Average Variance Extracted |
| A/L | - | Advanced Level |
| AFC | - | Automated Fare Collection |
| AU | - | Attitude towards the Use |
| BLE | - | Bluetooth Low Energy |
| BSMSR | - | Bus Service Modernization & Sahasara Reforms |
| CBSL | - | Central Bank of Sri Lanka |
| CR | - | Composite Reliability |
| CFA | - | Confirmatory Factory Analysis |
| DTPB | - | Decomposed Theory of Planned Behaviour |
| DOI | - | Diffusion of Innovations |
| GCE | - | General Certificate of Education |
| KMO | - | Kaiser Mayer Olkin |
| IU | - | Intention to Use |
| HTMT | - | HeteroTrait-MonoTrait |
| NFC | - | Near Filed Communication |
| NFI | - | Normal Fit Index |
| O/L | - | Ordinary Level |
| PC | - | Perceived Compatibility |
| PE | - | Perceived Ease of Use |
| PS | - | Perceived Security |
| PU | - | Perceived Usefulness |
| PLS | - | Partial Least Square |
| QR | - | Quick Response |
| SEM | - | Structural Equation Modeling |
| SN | - | Subjective Norms |
| SRMR | - | Standardized Root Mean Square Residuals |
| TAM | - | Technology Acceptance Model |
| TPB | - | Theory of Planed Behaviour |
| TRA | - | Theory of Reasoned Action |
| UTAUT | - | Unified Theory of Acceptance and Use of Technology |