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The Determinants of Customer's Behaviour Towards the Use of Urban Light Rail Transit in Mauritius

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Abstract

The government of Mauritius has immensely invested in the Mauritius Light Rail Transit (MLRT) to popularise this mode of transport among Mauritian citizens, ensuring its viability and maximising the socio-economic benefits of the project. Understanding how MLRT customers perceive this mode of transport and what factors influence ridership is crucial for the management of the MLRT and for policymakers to develop better long-term strategies and maximise the profitability of the transport system. Hence, this study adapted an extended version of the theory of planned behaviour (TPB), using three additional constructs, novelty seeking, trust and external factors (media campaign), to determine the psychological factors influencing the behavioural intentions of passengers travelling by MLRT. Data were collected along the alignment near MLRT stations, and 393 respondents were surveyed. The findings showed that attitude, perceived behavioural control and subjective norms have positive correlations with the behavioural intention to travel by the MLRT. In addition, novelty seeking, trust and external factors were found to positively influence attitude. Finally, trust and external factors were found to positively influence both perceived behavioural control and subjective norms. Based on the analysis, recommendations were made to local authorities and the management of Metro Express Ltd to use the findings of this study and build upon them to promote the MLRT and increase ridership.

Categories: Consumer Behavior, Social media and customer relationship management, Transportation
Keywords: light rail transits, consumer behaviour, economic implications, mauritius, transport

Introduction

The public transport system is a subject of prime importance for many countries, and providing a proper public transport service is a challenge for many companies. While in some areas, economic expansion has put pressure on existing transport infrastructures and necessitated further investments, in many other settings, investments in transport systems seem to be a catalyst for economic growth [1]. Successive governments have carried out feasibility studies on the implementation of a railway system in Mauritius with the objective of reducing road traffic congestion, but the project never went through until 2017, when the Mauritius Light Rail Transit (MLRT) project was announced and the government-owned company, Metro Express Ltd (MEL), was created and incorporated [2].

The light rail transit (LRT) system is a mode of transport that is gradually conquering major cities in the world as a sustainable mode of public transport, due to its versatility and benefits in the economic, environmental and social fields [3]. The MLRT also offers numerous benefits to the population by providing Mauritians with an accessible, affordable, reliable and safe public transportation system. However, many debated about its financial viability in the Mauritian context, referring to various other projects around the world [4]. The travel behaviours and intentions of riders have been the subject of various studies in the literature, and many adaptations of the theory of planned behaviour (TPB) have been developed to predict the adoption of railway as public transport [5-8].

The financial investment of the Government of Mauritius in the MEL is consequent, and the aim of the government is to popularise this mode of transport among Mauritian citizen to ensure its success. The benefits brought along with this new mode of transport provide a solution to the long-standing public transport issues in the country, and therefore there are many factors influencing the usage of this mode of transport by the public. Despite these efforts by the government, there is limited research exploring the behavioural and psychological factors that influence the adoption of the MLRT in Mauritius. Addressing this gap is essential for understanding the barriers and drivers of ridership and for guiding policy and promotional strategies to enhance its utilisation.

The recent launch of additional stations has seen a gradual increase in ridership, but it is still far from the 55,000 riders estimated to make the project profitable. Investigating how MLRT riders perceive this mode of transport and identifying the factors influencing ridership are key objectives of this study. The findings

will provide valuable insights to the management of MEL and the Government of Mauritius, aiding in the development of effective promotional strategies and addressing potential challenges to increase ridership. The factors positively and negatively affecting the adoption of MLRT will be understood, and, consequently, promotional strategies can be drawn to encourage the public in general to travel by Metro Express. Hence, this study aims to investigate and identify the factors that contribute to the riders' behavioural intention to travel by the MLRT.

This research aims to contribute to the literature by analysing the factors influencing riders' intention to travel by the MLRT (i.e., Metro Express). It uses a modified model of TPB to determine the willingness to travel by Metro Express. Attitude, encouragement and approval from people of importance (family, friends, peers, etc.) and the belief in having the necessary resources (time, money, accessibility, etc.) are expected to positively influence the riders' intention to travel by Metro Express. Additionally, as previously proposed, in this research, factors such as trust, novelty seeking and external factors are expected to be correlated with riders' tendency to choose the MLRT as a mode of transport.

Despite the introduction of the MLRT as a major public transport initiative, there is limited understanding of the psychological factors influencing commuters' intention to adopt this new mode of transport. While previous studies have highlighted the importance of factors such as attitude, perceived behavioural control and subjective norms in shaping behavioural intentions, little research has been conducted on the role of novel constructs like novelty seeking, trust and external factors in the Mauritian context. This study aims to address this gap by examining how these psychological factors, along with traditional constructs from the TPB, influence riders' intention to use the MLRT. Understanding these factors is critical for policymakers and transport authorities to design effective strategies to increase ridership, enhance public trust and optimise the operational success of the MLRT.

Literature review

Public Transport

Public transport provides citizens with the desired travel service, which allows mobility from a point to the rider's destination. Public transport users are provided with basic transit services for persons not owing personal transport or for people who choose to travel by public transport. The benefits derived from public transport, such as the reduction of traffic congestion, shorter trip times, lower consumption of energy and fossil fuels, and environment protection, equally benefit both users and non-users. The importance of public transport was enumerated by Weisbrod et al. [9]; as a job-generating sector, it can also contribute to the development of land and infrastructures. Furthermore, public transportation is an important pillar of the economic growth in any country, providing a short-term stimulus and, in the long term, having a cumulative impact on productivity.

Light Rail Transit

LRT, also commonly known as a light rail vehicle, combines elements of both tramways and metro systems. It is a kind of urban rail vehicle. Even though its architecture is closer to that of a conventional tramway, its capacities and velocity are relatively higher, where, theoretically, on the designated corridor, the road-rail interaction occurs only at level crossings [10]. Most LRT models are electrically powered with systems using overhead lines, whereas recent architectures use electrically ground-powered trams with supercharged capacitor banks for power storage.

Brief History of Trains in Mauritius

Trains were first introduced in Mauritius in the 1860s by the British when Mauritius was still a British colony. The 155-mile rail network connected villages and towns across the island, and the contribution of the rail network was considerable to the advancement of the country's economy and social benefits [11]. The sugarcane industry was then the pillar of the economy, and most of the train network was used as sugarcane carriers between sugar mills, which was commonly known as the Sugar Mill lines [11]. However, 100 years later, the socio-economic success of the Mauritius railway faded, and it was plagued by a heavy deficit. This led to the dismantling of the network in 1956, with the halt of the passenger service operations and, later in 1964, the complete closure of the sugar and goods rail carriers [11].

Theory of Planned Behaviour

According to the TPB, future behaviours of an individual are influenced by their behavioural intentions [12]. TPB is well known for its success and practicality as a concept that explains human behaviour [13,14]. The theory presents a paradigm for understanding how humans are directed in their activities. It forecasts the recurrence of a specific behaviour, assuming that the behaviour is deliberate. The concept is a development of the theory of reasoned action (TRA) [15]. As stated by Ajzen [16], "The TPB predicts that human behaviour is a function of behavioural intention, which in turn is influenced by attitude, subjective

norms (SN) and perceived behavioural control (PBC)". Behavioural intentions are an indicator that must be monitored to determine if a customer will continue using the products and services of an organisation, as the stronger is the intent, the more the behaviour can be expected [17]. In the literature, a great number of studies have tested the efficacy of TPB to predict intention, and it has also been applied to determine the method of transport and travel preferences [18-20].

Perceived Behavioural Control

In the early 1980s, the TRA was fairly criticised as it was perceived to be a model that was unsuccessful in cases where people had limited volitional control [14,16,21]. Perceived behavioural control was then combined with the initially proposed TRA [12]. Perceived behavioural control refers to "people's perception of ease or difficulty in executing the behaviour of interest" [16].

Considering the example of the method of transportation, a rider has a more significant intention to travel through a specific medium based on the ease of use. Hence, the following hypothesis can be proposed:

H1: There is a positive relationship between perceived behaviour control and customers' intention to use the MLRT.

Attitude

According to Ajzen [22], "attitude is defined as a latent disposition or tendency to responds with some degree of favourableness or unfavourableness to some psychological object". An individual's attitude is subjective, that is, it can vary either positively or negatively depending on the circumstances they face. This suggests that the attitude developed from past experiences may change over time when new events are faced [23]. If a person develops a more positive attitude, the stronger their intention to behave in a specific way will be [24]. In the same way, riders have an attitude towards the adoption of a mode of transport, and it determines their behavioural intention. Several studies in the literature have measured consumer's attitude, validating the application of the TPB in determining the behavioural intention in the choice of mode of transport [25-27]. The following hypothesis is thus proposed:

H2: There is a positive relationship between attitude and customers' intention to use the MLRT.

Subjective Norms

Ajzen [16] defined subjective norms as a social influence that motivates people to act and behave in a generally accepted manner. Generally speaking, the subjective norm is how a person perceives the opinions of other as a pressure on their behaviour. Many studies have demonstrated a positive relationship between subjective norms and behavioural intention. In their study, Heath and Gifford [28] found that subjective norms have a positive effect on individuals' intention in choosing a mode of transport. The research conducted by Roche et al. [29] follows the same flow, confirming the necessity of subjective norms in the prediction of travel behaviour for public transport. Researchers have also observed that subjective norms might have a volatile influence on behaviour, and if the social influence no longer prevails, the large majority of individuals will revert to their initial behaviour [30]. However, it is still argued that if a person intends to take an action, they will be more inclined to exhibit that behaviour if the social influence supporting it is omnipresent [31]. Based on what have been said, the following hypothesis can be constructed:

H3: There is a positive relationship between subjective norms and customers' intention to use the MLRT.

Extended TPB

White [32] stated that to improve the reliability of forecasts when implementing the TPB, it is recommended to introduce additional constructs. This was also supported by Correia et al. [33], where TPB was extended to include variables - in simpler terms, self-regulatory variables that drive a person's intentional behaviour. Past studies have tested additional variables, such as "trust", "satisfaction", "situational factors" and "external influence", for the extension of TPB [27]. Building on the past success of Borhan et al. [6] and Ambak et al. [27], our research is also adapting the constructs of "novelty seeking", "trust" and "external factors" to improve the estimate of behavioural intentions among MLRT riders.

Novelty Seeking

Novelty seeking is commonly described as a motivation in the literature. Consumer distinctions, such as personal traits, demographic characteristics and psychographic profiles, are strongly linked to the development of one's attitude and behavioural intentions [8,34,35]. One of the main qualities of a person is novelty seeking; it can be described as the driving factor behind the pursuit of new stimulation and is

strongly linked to attitude [36]. Customers displaying a relatively high tendency to seek novelty are more inclined to reach out for new stimulations by adopting new technology [35,36]. Novelty seeking has been extensively discussed in the tourism sector and has also been applied in the transportation literature to investigate novelty-seeking behaviour [37].

Hsiao and Yan [8], in their study of high-speed rail in Taiwan, concluded that "novelty seeking has an indirect considerable influence on student's intention through attitude". Another research conducted on the "rider's willingness to take the train in Petaling Jaya, Malaysia also confirmed that novelty seeking has a positive effect on attitude" [7]. Borhan et al. [6] have also demonstrated that "novelty seeking has a positive and indirect influence on Libyan car drivers to take low-cost airlines for intercity travel via attitude". Most recently, Ambak et al. [27] also revealed that "novelty seeking has a positive and direct relationship with behaviour intention to take the new high-speed rail for intercity travel in Libya through attitude". The studies mentioned [6,8,27,38] did not investigate on the relationship of novelty seeking on perceived behavioural control and subjective norms. Relying on the success of past studies, these findings have motivated the current research to propose the relationship between novelty seeking and attitude. Thus, the following hypothesis is formulated:

H4: There is a positive relationship between novelty seeking and customers' attitude for the MLRT.

Trust

Consumer trust is defined as what the customer expects from a supplier regarding a product/service that the latter can rely upon to meet its commitments [38]. Clients must be confident that the concerned party, if fully engaged, has the capacity to deliver the product or service successfully, as this will maintain the trust of the customers [39]. According to Madha et al. [7], numerous researchers have highlighted the significance that trust holds in any business relationship, and it is more pronounced with higher risk, uncertainty or when there is not enough information communicated to the users. In a study on the high-speed railway in Taiwan, Bhattacherjee [40] pointed out that trust indirectly impacts riders' intention through the TPB variables: "attitude", "perceived behavioural control" and "subjective norms". The same is also supported in the literature for the transport industry and the prediction of rider's intention, where it was concluded that trust is also indirectly linked to behavioural intention through the mediating variables [6-8,27].

From the theoretical background, the hypotheses listed below are suggested:

H5: Trust has a positive influence on customers' attitude for the MLRT.
H6: Trust has a positive influence on customers' perceived behavioural control for the MLRT.
H7: Trust has a positive influence on the subjective norms of customers for the MLRT.

External Factors (Media Campaign)

The literature relates to external influences, such as media coverage, analysis reports by professionals and any information available that holds significant interpersonal influence on individuals when performing a behaviour, as determined by Wakefield et al. [41] for the acceptance of e-commerce. Mass media have a substantial effect on the marketing value of the products and services an organisation offers, as showcased by researchers [42]. In the transport industry, numerous studies have highlighted that advertising media and the formation of someone's attitude have a significant affinity [42]. Subsequently, it has been demonstrated that intensive media actions have a direct and positive effect on perceived behavioural control, subjective norms and, therefore, indirectly on behavioural intention. Supported by past research, the following hypotheses are proposed:

H8: External factors have positive influence on customers' attitude for the MLRT.
H9: External factors have positive influence on customers' subjective norms for the MLRT.
H10: External factors have positive influence on customers' perceived behavioural control for the MLRT.

Proposed Framework

Figure *1* illustrates the proposed theoretical framework of this study. This framework is designed to address the identified research gaps, providing a foundation for examining the psychological and contextual factors influencing ridership of the MLRT. The framework integrates constructs from the TPB - namely, perceived behavioural control, attitude and subjective norms - along with additional factors such as novelty seeking, trust and external factors, to better understand MLRT riders' behavioural intentions in the context of Mauritius.

The research gaps highlight the need for a deeper investigation into how these traditional and novel constructs interact to shape behavioural intentions, especially in underexplored contexts like Mauritius. By extending the TPB with the inclusion of trust, novelty seeking and external factors, this study

contributes to the existing literature and provides actionable insights for policymakers and MLRT management.

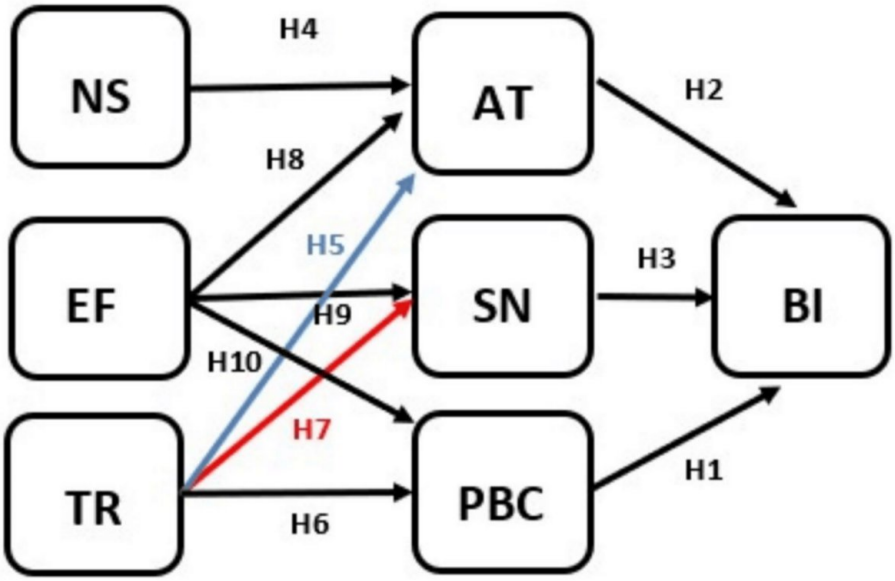

FIGURE 1: The Theoretical Model

BI: Behavioural Intention, AT: Attitude, SN: Subjective Norms, PBC: Perceived Behavioural Control, NS: Novelty Seeking, TR: Trust, EF: External Factors

Research Method

Research context

The Mauritian public transport industry was reshaped when the LRT came into the limelight with its introduction in 2019, following a paradigm shift by the then-government. The MLRT project is a major structural and engineering undertaking for the country and, more importantly, offers substantial development for the citizens of Mauritius. It is perhaps the most complex and challenging public infrastructure project the country has ever attempted.

Despite the launch of the MLRT as a significant public transport initiative, there remains a limited understanding of the psychological factors influencing riders' intentions to adopt this new mode of transportation, particularly in the Mauritian context. This study seeks to address this gap by exploring how these psychological factors, alongside traditional constructs from the TPB, affect riders' intention to use the MLRT.

Research design

This study has adopted a quantitative approach, which is relevant for meeting the aim of testing the relationship between the variables in the hypotheses developed from past studies. Quantitative research methods are used in studies to make the results more objective, replicable, generalisable and where the predictions are sought [43].

Population and sampling frame

The population size was determined using the 2021 population estimates from the Statistics Mauritius, which totalled 4,81,054 residents in the two districts [44]. Hence, the sample size was around 400. Respondents were selected from the vicinity of the 19 stations in service using a convenience sampling technique, where participants were chosen based on their availability and proximity during the operating hours of the MLRT, from 6 a.m. to 7 p.m.

Research instrument and data collection

To achieve the objectives of this study, primary data were collected using a survey administered in the vicinity of the MLRT stations through a self-administered questionnaire. The first part of the

questionnaire collected demographic data, which includes the rider's age, gender, motor vehicle proprietorship, income, residence, work location and highest level of education. The second part of the questionnaire consisted of scale items taken from previously validated measures in the literature. Behavioural intention was measured using a four-item scale adapted from past studies [41,45-47]. Perceived behavioural control scales were inspired by the studies of Hsiao and Yang [8], Taylor and Todd [47] and Mehrabian and Russell [48]. Attitude and subjective norms were adapted from the studies of Hsiao and Yang [8], Wakefield et al. [41] and Lee and Crompton [49]. Novelty seeking was measured using scales from the studies by Hsiao and Yang [8], Sirdeshmukh et al. [37] and Lee and Crompton [49]. Trust was measured using scales influenced by the studies of Meyer and Goes [50] and Hair et al. [51]. The variables were measured using a 5-point Likert scale, with "Strongly Disagree" denoting 1 and "Strongly Agree" denoting 5, whereas the value 3 represents a "Neutral" answer.

Pilot testing

Pilot testing is generally carried out to confirm the reliability and validity of the questionnaire and to ensure that the questions are comprehensible to the interviewees [52]. A small-scale trial was introduced to 50 riders in the vicinity of five main MLRT stations, and their feedback will determine any modifications required in the questionnaire. Based on the pilot study feedback, minor adjustments were made to improve question clarity and relevance.

Data analysis

After the data were collected, they were processed and analysed to address the research question. The analysis focused on identifying patterns and relationships between the variables. Demographic data were examined first to uncover any variations in behavioural intentions across different population segments. Subsequently, a multiple regression analysis was conducted to assess the relationships between the independent variables and the dependent variable. A significance level of 0.05 was applied for hypothesis testing. To perform these analyses, the Statistical Package for the Social Sciences (SPSS) version 28.0 was used, leveraging its capabilities to efficiently generate the required statistical outputs and facilitate the interpretation of the results.

Research limitations

This study has several limitations. While a convenience sampling method was used for practical reasons, this approach may limit the generalisability of the findings and should be considered when interpreting the results. Data collection was restricted to the vicinity of the 19 stations and conducted between 6 a.m. and 7 p.m., potentially excluding insights from riders who travel outside these hours or reside in more remote locations. The reliance on self-reported data introduces the risk of social desirability bias, where respondents may provide answers they perceive as favourable rather than truthful. Furthermore, the temporal context of data collection may limit the study's findings, as perceptions could vary depending on the time of day, week or year when the survey was conducted. These factors may constrain the generalisability of the study's results.

Results

Pilot testing

A pilot test was conducted with 50 questionnaires (n = 50), and from the data gathered, the reliability of the adapted constructs was tested by calculating Cronbach's alpha. The closer the alpha coefficient is to 1, the more reliable the construct, with a value above the threshold of 0.7 considered acceptable [53].

Variable	Cronbach's Alpha	Items	Responses
Behavioural Intention (BI)	0.94	4	
Perceived Behavioural Control (PBC)	0.87	4	
Attitude (AT)	0.95	4	
Subjective Norm (SN)	0.95	3	n = 50
Novelty Seeking (NS)	0.88	4	
Trust (TR)	0.92	5	
External Factors (EF)	0.80	3	

TABLE 1: Pilot Reliability Testing

Based on the Cronbach's alpha coefficients calculated and displayed in Table *1*, all seven constructs used in the theoretical model have relatively high coefficients, which is above the 0.7 threshold [53]. Therefore, the constructs used are considered reliable. Similar results can be expected if the survey is continued with more respondents.

Variable	Cronbach's Alpha	Items	Responses
Behavioural Intention (BI)	0.92	4	
Perceived Behavioural Control (PBC)	0.84	4	
Attitude (AT)	0.94	4	
Subjective Norm (SN)	0.94	3	n = 393
Novelty Seeking (NS)	0.89	4	
Trust (TR)	0.92	5	
External Factors (EF)	0.78	3	

TABLE 2: Reliability Test Result

The measures of the seven variables were tested again after the survey was completed using Cronbach's alpha to validate their reliability and consistency in estimating the latent variables. As shown in Table *2*, the constructs "attitude" and "subjective norms" had the highest alpha coefficient of 0.94, followed by "behavioural intention" and "trust" with coefficients of 0.92. The coefficient for "novelty seeking" was found to be 0.89, "perceived behavioural control" was 0.84 and, finally, the lowest coefficient, 0.78, was calculated for "external factors". All the variables have alpha coefficient higher than the 0.7 threshold [54], and, hence, the result confirms the reliability of the constructs used in this research.

Demographic profile

The number of respondents was 393 for a sample size of 400, that is 98% responses of the sample size were obtained. The survey was conducted using both hard copies and soft copy (Google Forms) of the questionnaire, where intercepted respondents were given the choice to fill out a hard copy of the questionnaire or on a tablet. Table *3* presents the demographic analysis of the survey.

Gender (n = 393)	Frequency	Percentage
Male	167	42.5%
Female	226	57.5%
Age (n = 393)	**Frequency**	**Percentage**
18–24 Years	108	27.5%

25–34 Years	176	44.8%
35–44 Years	58	14.8%
45–54 Years	32	8.1%
55–64 Years	9	2.3%
65 Years and Above	10	2.5%
Residence (n = 393)	**Frequency**	**Percentage**
Black River	13	3.3%
Flacq	2	0.5%
Grand Port	9	2.3%
Moka	14	3.6%
Pamplemousses	22	5.6%
Plaines Wilhems	240	61.1%
Port Louis	50	12.7%
Rivière du Rempart	28	7.1%
Savanne	15	3.8%
Destination (n = 393)	**Frequency**	**Percentage**
Black River	36	9.2%
Grand Port	4	1.0%
Moka	17	4.3%
Plaines Wilhems	121	30.8%
Port Louis	205	52.2%
Rivière du Rempart	8	2.0%
Savanne	2	0.5%
Employment Status (n = 393)	**Frequency**	**Percentage**
Employed	328	83.5%
Unemployed	21	5.3%
Self-Employed	17	4.3%
Retired	2	0.5%
Student	18	4.6%
Not Applicable	7	1.8%
Vehicle Ownership (n = 393)	**Frequency**	**Percentage**
None	177	45.0%
Car	183	46.6%
Autocycle/Motorcycle	26	6.6%
Other	7	1.8%
Monthly Income (n = 393)	**Frequency**	**Percentage**
Less than Rs 10,000	41	10.4%
Rs 10,000–Rs 20,000	115	29.3%
Rs 20,001–Rs 30,000	78	19.8%
Rs 30,001–Rs 40,000	70	17.8%

Rs 40,001–Rs 50,000	78	19.8%
More than Rs 50,000	11	2.8%
Education Level (n = 393)	**Frequency**	**Percentage**
No School Education	1	0.3%
Primary Education	5	1.3%
Secondary Education	9	2.3%
School Certificate (or Equivalent)	27	6.9%
Highest School Certificate (or Equivalent)	72	18.3%
Diploma	69	17.6%
Professional Qualifications	9	2.3%
Undergraduate	106	27.0%
Postgraduate	95	24.2%

TABLE 3: Demographic Characteristics

The findings from the demographic profile provided valuable insights into the determinants of riders' behaviour towards the use of MLRT in Mauritius. Referring to Table *3*, it can be observed that out of the 393 respondents, a larger proportion were female (226), representing 57.5% of the sample, and 167 were male, representing 42.5% of the sample. The significant representation of female riders suggested that enhancing safety, convenience and accessibility could further encourage their adoption of the MLRT. The study revealed that younger individuals, particularly those aged between 18 and 34, form the majority of users, indicating that mobility patterns and transit policies should cater to this demographic. The place of residence of the respondents was highly dominated by the Plaines Wilhems District, which represents 61.1%, whereas for the destination, it is dominated by Port Louis, followed by Plaines Wilhems, with 52.2% and 30.8%, respectively. This result was expected as the MLRT operates within the Port Louis and Plaines Wilhems corridor exclusively so far and that the survey was carried out in this region. For the employment status of the respondents, it was determined that most respondents were employed, with 328 representing 83.5%. This result is also consistent with the age group dominance, which fits the working class. The motor vehicle ownership was as follows: 46.6% of respondents were car owners, 45% did not have any motor vehicle, 6.6% owns an autocycle/motorcycle and 1.8% were owners of other types of motor vehicles. The monthly income profile was as follows: the less than Rs 10,000 range accounted for 10.4% of the sample; the range between Rs 10,000 and Rs 20,000 represented the major proportion at 29.3%; the Rs 20,001-Rs 30,000 range accounted for 19.8%; the Rs 30,001-Rs 40,000 range had 17.8%; the Rs 40,001-Rs 50,000 range accounted for 19.8%; and the smallest percentage of respondents had an income of more than Rs 50,000. The analysis of the education level showed that most respondents were educated, with the sample dominated by undergraduates, who represented 27%, closely followed by postgraduates at 24.2%. The highest school certificate accounted for 18.3%, the diploma level for 17.6% and other education levels were relatively less represented in the sample.

The findings from the demographic profile provided valuable insights into the determinants of customers' behaviour towards the use of urban LRT in Mauritius. The study revealed that younger individuals, particularly those aged between 18 and 34, form the majority of users, indicating that mobility patterns and transit policies should cater to this demographic. Additionally, the significant representation of female commuters suggested that enhancing safety, convenience and accessibility could further encourage their adoption of the light rail system. The dominance of employed respondents highlighted the importance of efficient scheduling, peak-hour frequency and reliability, as most users relied on the system for work-related commuting. The geographical concentration of commuters within the Port Louis and Plaines Wilhems corridor confirmed that the current light rail system serves its intended purpose, but future expansions may be necessary to attract users from other regions.

Moreover, based on the sample collected, motor vehicle ownership was nearly balanced between car owners and non-owners, suggesting that some commuters choose the light rail despite owning a vehicle, likely due to factors such as cost savings, convenience and traffic congestion. Understanding these motivations can help develop strategies to encourage further adoption among car owners. The income distribution of respondents indicates that affordability remains a key determinant, with the highest proportion of users falling within the Rs 10,000-Rs 30,000 income range. This underscores the need for optimised pricing strategies to enhance accessibility. Furthermore, the predominance of respondents with tertiary education suggests that awareness of environmental benefits and sustainable transport solutions

may influence light rail adoption. Hence, addressing the specific needs of key demographic groups, improving safety and infrastructure and optimising pricing models can contribute to increasing ridership and ensuring long-term sustainability of urban public transportation.

Multiple linear regression analysis

Multiple linear regression was carried out using the IBM SPSS Statistics software package, and the relationships between the dependent and independent variables were analysed to test the hypotheses elaborated in this research. Four multiple linear regressions were performed to analyse the outcome variables: “behavioural intention”, “attitude”, “perceived behavioural control” and “subjective norms”.

Model Summary[a]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.857[a]	0.735	0.733	0.44717	2.384

TABLE 4: Model Summary for Dependent Variable - Behavioural Intention

[a]Predictors: (Constant), Subjective Norms, Perceived Behavioural Control and Trust

From the linear regression results shown in Table *4*, the model shows a strong fit, explaining 73.3% of the variance in the behavioural intention to use the MLRT, based on an adjusted R-squared value of 0.733. The residuals were also found to be independent, as the Durbin-Watson (DW) statistic is 2.384, which is within the acceptable range of $1 \leqslant DW \leqslant 3$ [53].

From the analysis of variance (ANOVA) in Table *5*, the F-test was conducted to determine the statistical significance of the explained variance: $F(3, 389) = 359.3$, $P < 0.001$. Hence, we deduce that this result is statistically significant and that it did not occur due to sampling error.

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	215.530	3	71.843	359.282	<.001[b]
	Residual	77.786	389	.200		
	Total	293.315	392			

TABLE 5: ANOVA Table for Dependent Variable - Behavioural Intention

[a]Dependent Variable: Behavioural Intention

[b]Predictors: (Constant), Subjective Norms, Perceived Behavioural Control and Trust

ANOVA: Analysis of Variance, df: Degrees of Freedom

From Table *6*, it can be seen that attitude ($\beta = 0.606$, $t = 13.372$, $P < 0.001$), perceived behavioural control ($\beta = 0.167$, $t = 3.741$, $P < 0.001$) and subjective norms ($\beta = 0.144$, $t = 3.562$, $P < 0.001$) were found to have a positive influence on the dependent variable, behavioural intention, to use the MLRT, and the results are statistically significant. In addition, the variance inflation factor (VIF) value is below the threshold of 10, confirming no multicollinearity between the variables. Attitude is the strongest predictor of the outcome variable with $\beta = 0.606$, followed by perceived behavioural control with $\beta = 0.167$, while subjective norms was found to be the weakest contributor to the variance with $\beta = 0.144$. Therefore, based on these findings, hypotheses H1, H2 and H3 are accepted.

Coefficients[a]								
Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	0.338	0.127		2.67	0.008		
	PBC	0.188	0.05	0.167	3.741	< .001	0.343	2.918
	AT	0.636	0.048	0.606	13.372	< .001	0.332	3.014
	SN	0.118	0.033	0.144	3.562	< .001	0.418	2.391

TABLE 6: Coefficients Table for Dependent Variable - Behavioural Intention

[a]Dependent Variable: Behavioural Intention. Predictors: (Constant), PBC, AT and SN

PBC: Perceived Behavioural Control, AT: Attitude, SN: Subjective Norms, VIF: Variance Inflation Factor

The regression model shown in Table 7 explains 62.6% of the variance in the outcome variable, attitude, as indicated by the adjusted R-squared value of 0.626, suggesting a moderate fit in explaining the relationship. The residuals were also found to be independent, as the DW statistic is 1.581, which is within the acceptable range of $1 \leqslant DW \leqslant 3$ [53].

Model Summary[a]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.793[a]	0.629	0.626	0.50474	1.581

TABLE 7: Model Summary for Dependent Variable - Attitude

[a]Predictors: (Constant), External Factors, Novelty Seeking and Trust

From the ANOVA in Table 8, the F-test was conducted to determine the statistical significance of the explained variance: $F(3, 389) = 219.373$, $P < 0.001$. Hence, we deduce that this result is statistically significant and that it did not occur due to sampling error.

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	167.666	3	55.889	219.373	<.001[b]
	Residual	99.104	389	.255		
	Total	266.769	392			

TABLE 8: ANOVA Table for Dependent Variable - Attitude

[a]Dependent Variable: Attitude

[b]Predictors: (Constant), External Factors, Novelty Seeking and Trust

ANOVA: Analysis of Variance, df: Degrees of Freedom

From Table 9, it can be seen that novelty seeking ($\beta = 0.105$, $t = 2.752$, $P < 0.01$), trust ($\beta = 0.445$, $t = 9.355$, $P < 0.001$) and external factors ($\beta = 0.343$, $t = 7.854$, $P < 0.001$) were found to have a positive influence on

the dependent variable, attitude, towards the adoption of Metro Express as a means of transport, and the results are statistically significant. In addition, the VIF value is below the threshold of 10, confirming no multicollinearity between the variables. Trust is the strongest predictor of the outcome variable, with β = 0.445, followed by EF with β = 0.343, and NS was found to be the weakest contributor to the variance with β = 0.105. The hypotheses H4, H5 and H8 are consequently validated.

Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	0.415	0.157		2.643	0.009		
	NS	0.116	0.042	0.105	2.752	0.006	0.658	1.521
	TR	0.478	0.051	0.445	9.355	< .001	0.422	2.372
	EF	0.343	0.044	0.343	7.854	< .001	0.502	1.994

TABLE 9: Coefficients Table for Dependent Variable - Attitude

[a]Dependent Variable: Attitude

NS: Novelty Seeking, TR: Trust, EF: External Factors, VIF: Variance Inflation Factor

The adjusted R-squared value of 0.491, as shown in the linear regression analysis in Table *10*, suggests that the model fit is not strong, explaining only 49.1% of the variance in the dependent variable, perceived behavioural control. The residuals were also found to be independent, as the DW statistic is 1.601, which is within the acceptable range of 1 ⩽ DW ⩽ 3 [53].

Model Summary[a]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.702[b]	0.493	0.491	0.54666	1.601

TABLE 10: Model Summary for Dependent Variable - Perceived Behavioural Control

[a]Dependent Variable: Perceived Behavioural Control

[b]Predictors: (Constant), External Factors and Trust

From the ANOVA in Table *11*, the F-test was conducted to determine the statistical significance of the explained variance: F (2, 390) = 189.902, P < 0.001. Hence, we deduce that this result is statistically significant and that it did not occur due to sampling error.

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	113.498	2	56.749	189.902	<.001[b]
	Residual	116.545	390	0.299		
	Total	230.043	392			

TABLE 11: ANOVA Table for Dependent Variable - Perceived Behavioural Control

[a]Dependent Variable: Perceived Behavioural Control

[b]Predictors: (Constant), External Factors and Trust

ANOVA: Analysis of Variance, df: Degrees of Freedom

From Table *12*, the variables trust (β = 0.529, t = 10.434, P < 0.001) and external factors (β = 0.221, t = 4.368, P < 0.001) were found to have a positive influence on the dependent variable, perceived behavioural control, to travel by the light rail service in Mauritius, and the results are statistically significant. In addition, the VIF value is below the threshold of 10, confirming no multicollinearity between the variables. Trust is the dominant predictor of the outcome variable with β = 0.529, and external factors was the weaker contributor to the variance with β = 0.221. Hence, hypotheses H6 and H10 are confirmed.

Coefficients[a]								
Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.119	0.15		7.457	< .001		
	TR	0.527	0.051	0.529	10.434	< .001	0.506	1.978
	EF	0.206	0.047	0.221	4.368	< .001	0.506	1.978

TABLE 12: Coefficients for Dependent Variable - Perceived Behavioural Control

[a]Dependent Variable: Perceived Behavioural Control

TR: Trust, EF: External Factors, VIF: Variance Inflation Factor

The results outlined in Table *13* show that the adjusted R-squared value is 0.426, which means that the regression model explains 42.6% of the variance in the dependent variable, subjective norms. This suggests that the model fit is not strong in explaining the relationship. The residuals were also found to be independent, as the DW statistic is 1.648, which is within the acceptable range of $1 \leq DW \leq 3$ [53].

Model Summary[a]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.655[b]	0.429	0.426	0.80137	1.648

TABLE 13: Model Summary for Dependent Variable - Subjective Norms

[a]Dependent Variable: Subjective Norms

[b]Predictors: (Constant), External Factors and Trust

Table *14* shows that the F-test was conducted to determine the statistical significance of the explained variance: F (2, 390) = 146.218, P < 0.001. The results obtained were statistically significant, and they did not occur due to sampling error.

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	187.801	2	93.901	146.218	<.001[b]
	Residual	250.456	390	.642		
	Total	438.257	392			

TABLE 14: ANOVA Table for Dependent Variable - Subjective Norms

[a]Dependent Variable: Subjective Norms

[b]Predictors: (Constant), External Factors and Trust

ANOVA: Analysis of Variance, df: Degrees of Freedom

Analysing the coefficient table in Table *15*, the variables trust (β = 0.266, t = 4.948, P < 0.001) and external factors (β = 0.439, t = 8.160, P < 0.001) were found to have a positive influence on the dependent variable, subjective norms, and the results are statistically significant. The VIF value is also below the threshold of 10, confirming no multicollinearity between the variables. External factors is the main predictor of the outcome variable with β = 0.439, followed by TR, which contributes to the variance with β = 0.266. Hence, hypotheses H7 and H9 are accepted.

Coefficients[a]								
Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-0.032	0.22		-0.145	0.885		
	TR	0.367	0.074	0.266	4.948	< .001	0.506	1.978
	EF	0.563	0.069	0.439	8.16	< .001	0.506	1.978

TABLE 15: Coefficient Table for Dependent Variable - Subjective Norms

[a]Dependent Variable: Subjective Norms

TR: Trust, EF: External Factors, VIF: Variance Inflation Factor

Table 16 presents the results of hypothesis testing, demonstrating that all proposed hypotheses (H1-H10) were supported.

Hypothesis	Result
H1: There is a positive relationship between Perceived Behavioural Control and customers' intention to use the MLRT.	Supported
H2: There is a positive relationship between Attitude and customers' intention to use the MLRT.	Supported
H3: There is a positive relationship between Subjective Norms and customers' intention to use the MLRT.	Supported
H4: There is a positive relationship between Novelty Seeking and customers' Attitude for the MLRT.	Supported
H5: Trust has a positive influence on customers' Attitude for the MLRT.	Supported
H6: Trust has a positive influence on customers' Perceived Behavioural Control for the MLRT.	Supported
H7: Trust has a positive influence on the Subjective Norms of customers for the MLRT.	Supported
H8: External factors have positive influence on customers' Attitude for the MLRT.	Supported
H9: External factors have positive influence on customers' Subjective Norms for the MLRT.	Supported
H10: External factors have positive influence on customers' Perceived Behavioural Control for the MLRT.	Supported

TABLE 16: Summary of Hypotheses Testing

MLRT: Mauritius Light Rail Transit

Discussion

The theoretical framework adopted in this study is an extended version of the TPB initially developed by Ajzen and Fishbein [12]. The influence on behavioural intention of three main constructs in the original model, namely attitude, perceived behavioural control and subjective norms, was tested first in the Mauritius context for the rail transport industry. From the first regression analysis, all the three constructs were found to have a significant relationship with the dependent variable, behavioural intention. A commuter with intention to travel by the MLRT is believed to have a higher adoption rate than a commuters with no intention [17]. Attitude, according to the results, was found to have the highest positive correlation with behavioural intention. This confirms that attitude is the most significant predictor for a commuter's intention to adopt the MLRT as a mode of transport. The higher the degree of favourableness the commuter will have, the stronger will be their intent to travel with the MLRT. This result is in line with past research in the rail transport industry carried out in other countries [54].

The results indicate that perceived behavioural control is also an important contributor to behavioural intentions, with a positive relationship. The more commuters find Metro Express affordable, accessible and easy to take, the stronger will be their intention to travel by Metro Express. We can find similar findings to this result in the literature with past research by Hussain et al. [54].

Subjective norms was found to have a positive association with the travel intention of the commuters. This result was also expected as demonstrated by previous research in this field. However, the influence of one's family, peers or social leaders is the lowest contributing factor but non-negligible to the formation of the intention in Mauritius for travelling by the MLRT.

Based on the results of the study, subjective norms was found to positively influence attitude toward the adoption of MLRT as a mean of transport. This result was also observed in the literature. Although that this variable has been found to have a lower correlation to attitude than trust and external factors, this is still an important component as currently the MLRT is a new project and public transport mode in the country. The sample used in this study was taken along the alignment of the MLRT line, the effect of NS could have been different if the sample was extended to other regions of the country.

Trust was found to have a strong positive correlation with attitude, perceived behavioural control and subjective norms, which in return influence the commuters' Intention to travel on the LRT. This result is also supported with the results in the literature and more recently with the contribution of Hussain et al. [54].

Analysing the empirical results for external factors (media campaign), the positive association with attitude, perceived behavioural control and subjective norms was observed. Hence, the media has an

indirect influence on customer's intention to use the MLRT through attitude, perceived behavioural control and subjective norms. This association was also previously observed in the literature to predict the intention to take new high-speed rail for intercity travel in Libya.

Given that the Metro Express is the major infrastructural project undertaken in the recent years, there are huge socio-economic expectations from the population, and this research provides the governmental authorities and management of MEL with a background to focus on specific areas to build up and optimise to increase the ridership and economic development around the MLRT. The results obtain from this research contribute to the literature by identifying the psychological factors that influence the intention to travel using the MLRT. Furthermore, as a public transport operator, MEL's accessibility to the LRT stations is vital for increasing ridership. In the current study, perceived behavioural control was used as a measure of accessibility, and it was found that commuters perceive the stations along the alignment as accessible. However, to attract more commuters, the National Land Transport Authority must consider linking other nearby regions to the 19 Stations. This can be achieved by integrating new bus routes in phase with the alignment, thereby reaching more commuters who would normally favour buses or their personal vehicles. Moreover, the government's decision to extend the initial Port Louis to Curepipe alignment to Reduit through Ebene will definitely encourage even more passengers to adopt the MLRT, as this will provide more destination possibilities and, consequently, greater accessibility.

In this research, the variables used to extend the TPB have been strongly associated with the original construct. The results show that travel intention can be positively influenced by considering factors such as novelty seeking, trust and external factors (media campaigns). The novelty effect is already omnipresent, as the MLRT is an innovation in public transport in Mauritius, especially given that the railway has been introduced after 50 years. However, this effect can be further optimised by highlighting innovations in terms of facilities, equipment and services provided. As for trust, the introduction of the MLRT has significantly improved the reliability and frequency of public transport in Mauritius, and it has also been found that the LRT is perceived as safe. If the organisation maintains this level of service over time, it will largely contribute to trust formation and consequently influence attitude, perceived behavioural control and subjective norms towards driving commuters' intention to travel with Metro Express. Nevertheless, the responsiveness and customer care aspects could be improved to foster greater trust among the public and consequently engage more users. Regarding external factors (media campaigns), the positive association with attitude, perceived behavioural control and subjective norms demonstrates the importance of this variable and its contribution to the formation of intention.

Conclusions

The findings revealed a strong positive correlation between attitude, perceived behavioural control and subjective norms with riders' intention to travel by MLRT. These results align with previous research on TPB, which highlights that attitude, perceived control and social influence are essential predictors of transportation-related behaviours. In addition to these core factors, the research also identified that novelty seeking, trust and external factors significantly influenced intention through attitude, supporting the idea that external and psychological influences play a key role in shaping travel intentions. Trust and external factors were further found to have a positive impact on intention via perceived behavioural control and subjective norms, indicating that the perception of control and social pressures also mediate the relationship between these additional factors and travel intention. This finding is consistent with studies examining how trust and media campaigns can influence decision-making in transportation. The role of external influences, particularly media campaigns, in shaping consumer behaviour is well documented, reinforcing the effectiveness of such strategies in promoting sustainable transportation choices. This research contributes to the literature by offering an application of the extended TPB in the Mauritian context, providing valuable insights into the psychological and external factors that drive riders' intentions to use the MLRT. This study is particularly novel in its application of the extended model to public transport behaviour in Mauritius, a context that has been largely underexplored in transportation research. The findings are not only academically significant but also practically useful for local authorities and MEL. By understanding the key drivers of ridership, the study offers a foundation upon which strategies can be developed to promote the MLRT, thereby increasing its usage and contributing to sustainable urban mobility. Given the scarcity of research in the Mauritian public transport sector, this study serves as a critical step in filling the gap and guiding future policies and initiatives.

Based on the findings, several actionable recommendations can be proposed to enhance the ridership of the MLRT. First, authorities and the management of MEL should prioritise campaigns that highlight the ease of use, accessibility and reliability of the service to strengthen perceived behavioural control among riders. Second, targeted marketing strategies can focus on fostering positive attitudes by emphasising the environmental benefits, cost savings and convenience associated with MLRT usage. Engaging in community outreach programmes to build trust and utilising strategic media campaigns to address external factors such as perceived safety and service reliability are also critical. Furthermore, promoting novelty-seeking experiences, such as discounts for first-time riders or family-oriented travel packages, can attract new users. By addressing these psychological and external factors, authorities can create an

environment conducive to increasing intention to use the service. Future research should expand the model by exploring additional psychological and contextual factors that may influence commuter intentions, such as environmental awareness, digital engagement and affordability concerns. Longitudinal studies can provide insights into how riders behaviour evolves over time and how these factors dynamically interact. Moreover, comparative studies with other public transport systems, both locally and internationally, can shed light on best practices and areas for improvement. Incorporating qualitative methods, such as focus group discussions or in-depth interviews, can further refine the understanding of nuanced riders preferences and barriers. These directions not only enhance the robustness of the extended TPB but also align the model with emerging trends and commuter expectations in public transportation.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Leenshya Gunnoo, Eric Bindah, Khooshal Ramrekha

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Disclosures

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