A Choice-Based Conjoint Experiment on Commuters'

Preferences for Public Transport Services:

A Case Study of Kathmandu

Tulsi Ram Aryal

Graduate School for International Development and Cooperation

Hiroshima University

Masaru Ichihashi

Graduate School of Humanities and Social Sciences

NERPS

Hiroshima University

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Tulsi Ram Aryal[1] and **Masaru Ichihashi**[2]

Abstract

The public transport system is the most efficient and equitable solution to urban mobility and climate change. To improve public transport; technological innovations, policies intervention and behavioral change should be addressed properly. The purpose of this study is to identify the commuters' preference for attributes of public transport under five attributes: mode of transport, waiting time, one-way fare per km, commute time per km and payment methods with its levels. The primary survey was conducted in Kathmandu with 373 commuters and the choice-based conjoint experiment method is used for analysis the data. The estimated result shows that 73% of the respondents were in favor of changing the current transport policy and wished for a modal shift to public transport. The most significant attributes are one-way fare per km and the mode of transport. Commuters are in favor of the attribute; mode of transport i.e., MRT with shifting the payment method from cash to e-payment. They have a negative influence on the motorbike as a mode of transport and the increasing current; fare, waiting time, commute time as well. This study can help transport planners to address public preference while making public transport policy.

Keywords: public transport, public preferences, choice-based conjoint experiment, modal choice

[1] Graduate School for International Development and Cooperation, Hiroshima University, 1-5-1, Kagamiyama, Higashi Hiroshima, 739-8529, Japan. Email: aryaltulsi@gmail.com

[2] Email: ichi@hiroshima-u.ac.jp

1 Introduction

Kathmandu Valley belongs to Bagmati province and expands into three administrative districts of Nepal, namely, Kathmandu, Bhaktapur and Lalitpur with a total area of 899 sq km *(Figure 1)*. The three districts have two metropolitans: Metropolitan City of Kathmandu and Metropolitan City of Lalitpur, and the sixteen municipalities. Kathmandu is the capital of the Federal Democratic Republic of Nepal and is the country's most important political, administrative, educational, cultural, and commercial center in the country. In the 2011 census year, the total population of Kathmandu Valley was 2,517,023 with an annual growth rate of 4.63%. This represents 9.32% of the total population in an area of just 0.49% area of the country. The Central Bureau of Statistics of Nepal predicts that the population of the Kathmandu Valley will reach four million by 2035 (CBS, 2018, JICA, 2017).

The road transport system is the main mode of mobility in Nepal. Rapid urbanization and increasing economic activities in cities have dramatically increased the demands for vehicles in urban areas. Due to the ineffective public transport services people have been attracted to private vehicles and the number of private vehicles is increasing rapidly as compared to public vehicle. In the last 15 years, the number of motorbikes and low occupancy modes of public transport i.e. minibus, microbus have increased rapidly. Although the government has invested in the expansion of the road in the city of Kathmandu, the increasing number of private vehicles makes the traffic situation as before. It shows that just expanding the road is not a sustainable solution for improving public transport. Considering the geographic area and the distance of the city from the business and official area, it is necessary to manage the reliable public transport and non-motorized

transport even in cities like Kathmandu. The fleet in the Kathmandu Valley is completely dominated by motorbikes with the highest share constituting 79.1% followed by 12.42% private vehicles (car, van, jeep), heavy-duty 4%, public transport 2.67% and others with an annual growth rate of 14%. (DOTM, 2019). The share of vehicles with low occupancy i.e. minibus, microbus represents 94% of total public transport vehicles and that of large buses is only 6%. (JICA, 2017). For the past decade, the road transport service in Kathmandu valley is affected by insufficient road length, narrow and busy roads, unattended traffic, poor traffic management infrastructure, a mix of old and new vehicles, and a multi-modal public transport system. The quality of service of current public transport in Kathmandu is poor, public transport takes more travel time than the private mode. MRT system should be implemented to reduce congestion, decrease fossil energy consumption and decreasing air pollution (Dhakal, 2006, JICA, 2017, KSUTP, 2017, MoUD, 2017 and IBN, 2017, Bajracharya and Shrestha, 2017 & ICIMOD, 2017). The current public transport system is complex, and the quality of service is also poor in Kathmandu Valley (World Bank, 2019).

Transport is the most important social and environmental issue in the world (Kingham et at., 2001). Transport is the infrastructure of infrastructures (Acharya and Pokharel, 2015), which is considered as the fundamental for urban development. The government of Nepal has prioritized the development of the transport sector. The main objective of the "National Transport Policy is to develop a reliable, cost-effective, safe, facility oriented and sustainable transport system that promotes and sustains the economic, social, cultural and tourism development of Nepal as a whole" (National Transport Policy 2001). Chen and Chai (2011), using the theory of planned behavior, technology acceptance model, and habit, studied the switching intentions of commuters to public

transit in Kaohsiung city, Taiwan found that the habitual behavior of private vehicles users obstructs a commuter scheme to switch from private vehicle to public transit. JICA (2017), recommended the appropriate timing for commencement of MRT system operation in Kathmandu referring to the practices of the introducing mass transit system in Asian mega-cities (24 cities) related to the gross income and to the people of the city. The first MRT operation was launched when the city's gross product was $ 3 to $ 30 billion. In the Kathmandu Valley, the population will be 4 million and per capita GDP will be exceeded US$ 900 in 2030. "Based on the experience in other Asian megacities, it shall be appropriate to introduce the 1st MRT system in Kathmandu valley between 2020 and 2030" (p. 122). Shrestha et. at., (2013) found that increasing vehicle speeds would reduce vehicle emissions and increasing urban mobility would improve the overall quality of life in the Kathmandu Valley. Das et al., (2018) stated that technological change may play an important role in minimizing vehicular air pollution in Kathmandu. Ashalatha, Manju and Zacharia (2013) applying the Multinomial Logistics (MNL), found the various factors affecting of a particular mode of transport, observing a case study in the city of Thiruvananthapuram, India, the reason of shifting from bus to two-wheelers or car is mainly due to inefficient and unreliable bus transport service. Jain, Aggarwal, Kumar, Singhal & Sharma (2014) developed reliability, comfort, safety, and cost as main criteria for the modal shift from private vehicles to taking public transport taking as a case study of Delhi. Using pair-wise weighing method (Analytical Hierarchy Process), found that safety (36%) is the most important criterion followed by reliability (27%), cost (21%) and comfort (16%). Liu and Guo (2015) studied the utility and the weight of factors of bus transit's service quality analysis in Nanjing, China by applying conjoint analysis.

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The private sector covers, almost 99% of public transport service investment in Nepal. There is no integrated policy for the management of the public transport service. Government regulations and monitoring capacities are weak. By reducing the attraction to private vehicles, encouraging NMT and the use of public transport is an urgent agenda for sustainable urban mobility. For this, it is better to know the preferences of users for effective implementation of an intervention. This study will examine the main attributes affecting commuters for the modal shift to public transport service in Kathmandu. Mass transit systems help to connect communities, support local economies, and improve the living standard of disadvantaged individuals. Therefore, a wide range of studies has been conducted in the field of public transport around the world. Researchers are constantly researching ways to improve public transport. They focused mainly on the infrastructure sector, the behavioral sector, and the psychological sector. This study was designed to know the preferences of Kathmandu Valley commuters regarding the modern transport system, before implementing the public transport policy in the future taking a case study that offered a unique research opportunity to investigate people's perceptions of the new service and their willingness to implement.

Research objective and questions

As the main objective of the choice-based conjoint experiment in this research is to examine the attributes affecting the choice behavior of commuters for improved public transport services in Kathmandu and to answer the following questions:

1) What are the factors associated with commuter's adoption of an improved public transport service?

2) Which attributes of the public transport service cause the modal shift?

3) How does each attribute affect the probability of preference?

4) What is the interaction with the passenger and the causal effect of the attribute?

To answer these questions, we have generated the attributes of hypothetical improved public transport services that have numerous external impacts on the surrounding environment.

2   Methodology

2.1   Description of the Study area

This experiment was carried out in Kathmandu, Nepal where the main mode of mobility is road transport. Over the past decade, Kathmandu Valley has been experiencing rapid urbanization, high population growth, uncontrolled urban sprawl and increased motorization leading to the problems of congestion, vehicular conflict, traffic accidents, environmental degradation, and poor public transport services. The government of Nepal will carry out various projects to improve the existing system. This study helps us to know the preferences of commuters' for improving public transport service in a very densely populated area.

Figure 1 Kathmandu Valley and ring road covered area
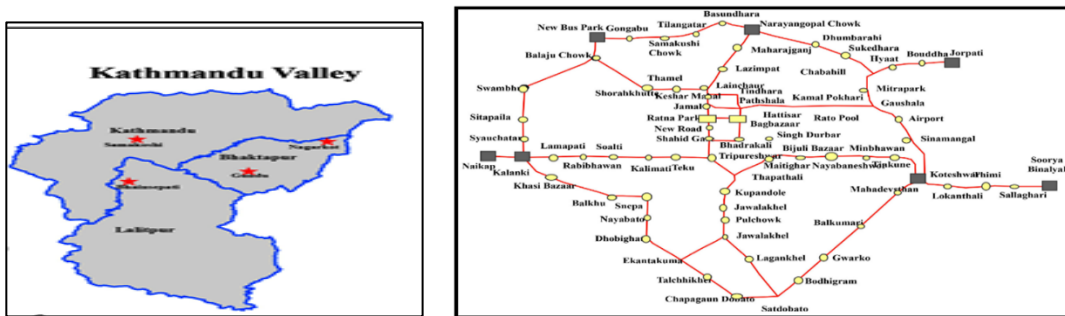
2.2   Data collection

For our study, the data were collected in two phases, the pilot, and the main survey. The survey was carried out within the periphery of the Ring road area, which is 27.3 km in length. For the study purpose, we deliberately chose the list of 71 main stops and divided the city into 4 study areas using central main stops and separating the list of 71 stops in each zone. The main survey lasted nine days according to the paper-based street survey method, for the everyday survey, the author prepared a random list of stops/streets by randomly selected area using Excel randomization function, the selected list of stops with value, that connect to the ring road area *(figure 1)*. The purposive selection of ring road area was made on the basis of based on four criteria; (1) Covers central area of the city of Kathmandu (2) Connections to Lalitpur and Bhaktapur districts (3) High population density (4) Almost every commuter in Kathmandu Valley should use the ring road to get around the city. During the survey, we visited 400 commuters, but 373 commuters participated in our survey. The response rate was 93.25%.

2.3   Research design

Conjoint analysis is used to study how buyers appreciate the characteristics of products or services and to predict buyer behavior (preference). It can be used to estimates the psychological trade-offs that committers make when evaluating different attributes together. The randomized conjoint experiment was applied to obtain the stated preference of the respondents. In a conjoint experiment, the respondent evaluates the profiles based on the attributes and levels considered, and then chooses the option from among many that give them the highest utility or rank them. It is assumed that the respondent treats his or her utility by adding the utility provided by each attribute level.

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Through the experiment, we can know the influence of each attribute level on the respondent's choice (Hainmueller, Hopkins, Yamamoto, 2014). While carrying out the experiment, we developed four-part survey questionnaires: (1) Information (2) Scenario (3) Choice-set of randomized conjoint experiment and (4) Background information about the respondent as; age, sex, marital status, level of education, occupation, regional location, employment status, monthly income, the average monthly cost of commuting, vehicle ownership, mainly using modes of transport, mostly using time, commuters' household members.

As suggested by Klojgaard, Bech, and Sogaard (2012), attributes and levels relevant for the conjoint analysis regarding the attributes of public transport systems were identified through quantitative methods. First, a literature search was conducted to identify the relevant attributes of public transport service features from the commuters' perspective. Second, a pilot survey was conducted among 28 commuters from different areas of Kathmandu city by a virtual interviewing method. In this study, a randomized conjoint experiment part consists of five attributes with levels. Each attribute has from two to five levels. The attributes and levels of each choice profile were

Table 1 Attributes, levels, and the baseline

No.	Attributes	Levels				
1	Mode of transport	***Bus***	Microbus	Taxi	Motorbike	MRT
2	Waiting time	5 minutes	***15 minutes***	30 minutes		
3	Fare	***NRs. 14***	NRs. 30	NRs. 45	NRs. 60	
4	Commute time	< 5 minutes	***5-15 minutes***	>15 minutes		
5	Payment method	E-payment	***Cash***			

Note: Bold and italic are the baseline

assigned randomly. Details of the attributes, levels and baseline are given below in the table. After reading the scenario, respondents were asked to rank the most preferable set of choice; by Choice set (A), Choice set (B) or Choice set (C) and rank 1, 2 or 3 based on their preference for enhanced public transport services. Each profile has been designed with different alternatives.

2.4 Estimation model

In this study, we tried to identify commuters' preferences for hypothetically improved public transport policies by estimating the probability of internal choice and external choice. In internal probability, we estimate the preference of respondents under hypothetical two alternative policies Choice (A) and Choice (B). In external choice probability, we estimate the preference of respondents between status quo and two alternative hypothetical policies. On the profile third alternatives and from left first two of them hypothetical alternatives have by 5 attributes and levels, the 3rd alternative is the status quo. These attributes are randomized to avoid any possibility of ordering effect for each respondent. Similarly, to avoid a cognitive strain, the order also was randomized for all three profiles given for the same respondent. To estimate the probability of internal and external choice, we followed the approach suggested by Hainmueller et al. (2014). They non-parametrically identified the average marginal component effect (AMCE) for each of the attributes and levels on the probability of choosing a profile by randomized conjoint analysis. As the attribute levels were assigned random and Ordinary Least Squares (OLS) was simply used to estimate the AMCE of each attribute as a coefficient based on a linear regression of the indicator of choice over the set of dummy variables for the attributes and levels. The model is as follows:

$$y_{itj} = \beta_0 + \sum_{l=1}^{L} \sum_{d=2}^{Dl} \beta_{ld} \times a_{itjld} + u_{itj}$$

Where the possible outcome of individual i in trial t of policy j will be defined by $y_{itj,}$ l stands for a number of attributes, D_l indicates the number of levels in each attributes l. Likewise, β_{ld} is the coefficient of each component to be estimated and a_{itjld} is a dummy variable for the dth level of a policy j in task t of a respondent i; and $u_{itj} \in \{0,1\}$ is an error term. In the internal choice probability estimation $y_{itj} = 1$ if the preference rank of policy j is higher than its alternative policy and 0 if the rank is smaller. The same, in the estimation of the external choice probability, $y_{itj} = 1$ if the preference rank of the policy j is higher than the status quo.

3 Results and Discussions

3.1 Descriptive statistics

During the survey, some general information of respondents was collected and analyzed. The gender balance was almost the same; 49.06 % were female and rest were male. Almost 69% of the respondents belong to the youth category from 17 to 40 years, which represent the youth category population in Nepal. The highest proportion of 42.36% of our respondents has a university degree followed by secondary 34.05%, basic level 15% and illiterate 8.56%. Similarly, 43.16% use public transport to get to work, 20.11% for school, 15.28% for grocery shopping, and 7.24% for leisure. In the case of ownership of vehicles, 64% of the respondents have no vehicles, 16.62% has a motorbike, 11.8% has a car and 2.68% have a bicycle. The current travel mode share of transport; bus 47.45%, microbus 23.59% and a motorbike 12.33%, 9.12% minibus and 3.75% tempo.

3.2   Average Marginal Component Effect

The average marginal component effect (AMCE) is the causal quantity of estimate using a pooled sample for external choice probabilities and internal choice probabilities. It displays the probability of profile (A) or (B) is chosen by the respondent (Hainmueller et al., 2014). This survey contains the status quo (C), which allow us to analyze the hypothetical proposal for improved public transport features with the current situation of the Kathmandu public transport service. The aeroplane dot plot is used to show the corresponding coefficient on X-axis, 95% confidence interval with horizontal bars and on the vertical axis shows the proposed attributes and their levels.

First, as a baseline, the most commonly used values for the public transport of each attribute level *(Table 1 written in italic and in bold letters)* were used to compare Choice (A) and Choice (B) including the status quo for analyzing the external probability. In the second part, we analyzed the probability of internal probability using baseline same with the external probability and compare only proposed hypothetical policies Choice (A) and Choice (B) without the status quo.

3.2.1   External choice probability results

The probability of External choice shows that commuters accept the new and improved characteristics of the public transport service compared to the current situation (status quo). The regression constant term of the regression was 0.7288 and means that 73% of the respondents chose the given profile (A) and (B) compare to (C). The estimated Average Marginal Treatment Effect (AMCE) on External Choice Probability, found a significant impact on all attributes. The result shows that the highest impact on probability choosing hypothetical policy has one-way starting fare and mode of transport.

The first attribute modes of transport have five-levels and as the baseline set to bus. However, the second-level microbus and the third-level taxi are not significant. The fourth-level motorbike is negatively significant. 14% of the respondents did not like to use the motorbike as a transport service. The fifth level MRT is 20% more preferred than the baseline. It shows that commuters are eager to move from the current situation to a new public transport system. The second attribute, waiting time has 3 levels: 5 minutes, 15 minutes, and 30 minutes. When we set 15 minutes as the baseline, it seems that waiting time 5 minutes has the positive impact probability by 12%, and the level 30 minutes has negatively influence by 12% if the policy has been implemented. For the attribute commute time (per km) the 5-15 minutes was set as a baseline, the level from less than 5 minutes has a positive impact by 12% and the level more than 15 minutes has a negative effect by 12%, which means respondents don't like to increase waiting time. The attribute one-way starting fare is the most influencing key attribute referring to external probability. If new, on way starting fare was set NRs. 60, the probability of respondents will take new public transport could be negatively affected by -54%, NRs. 45 by -45% and NRs. 30 by -28% respectively to be chosen a new policy. The last and fifth attribute fare-paying method has a significant effect. It has 2 levels: e-payment and cash. When we set cash as the baseline, the level e-payment has a positive impact by 3%, which means that respondents like to use e-payment, *figure 2*.

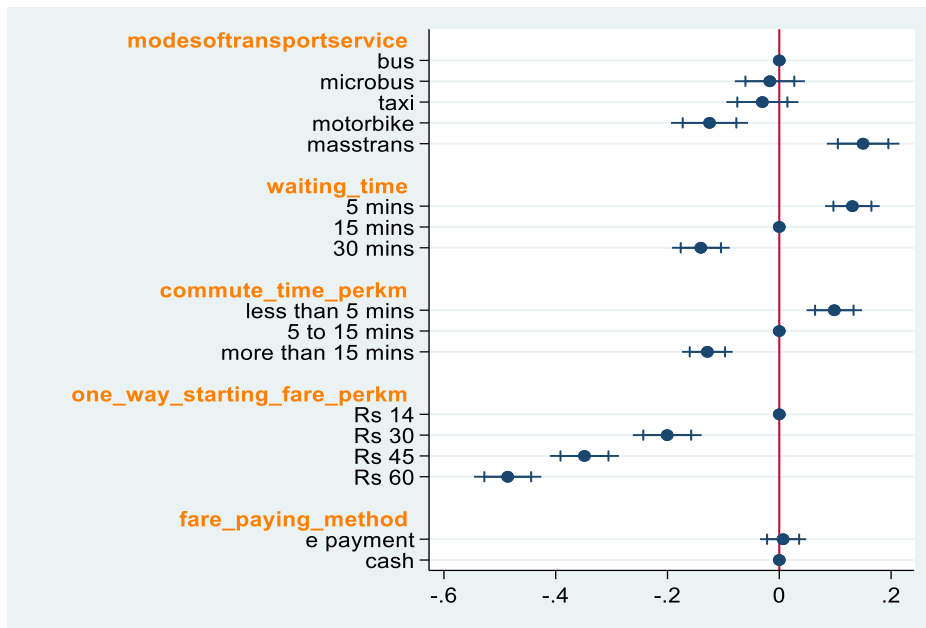*Figure 2 Average Causal Effect on the External Choice Probability*
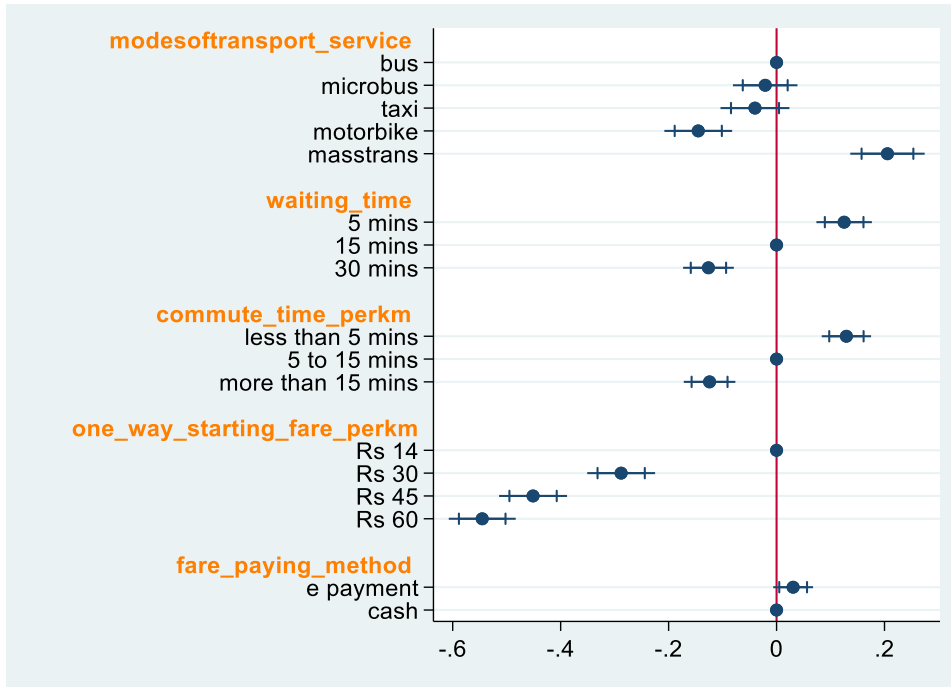
Constant = 0.728 Note: Cluster standard error is estimated in respondent level and horizontal bar is adjusted within 95 percent confidence interval.

3.2.2 Internal choice probability results

Internal choice probability reveals the most preferred package between the proposed two public transport improvement packages namely package (A) and package (B). They prefer the improved service which includes the mass transit system, less waiting, and commutes time with less per km fare. Although there is an improvement in the service, they do not care about the fare payment method, *figure 3*. The first attribute modes of transport have five levels and as the baseline set to bus. However, the second-level microbus and the third-level taxi are not significant. The fourth level of the motorbike is negatively significant, 12% of the respondents did not like to use the motorbike as a public transport service. The fifth level MRT is 14% more preferred than baseline.

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The second attribute, waiting time has 3 levels: 5 minutes, 15 minutes, and 30 minutes. When we set 15 minutes as a baseline, it seems that the 5 minutes waiting time has the potential to increase the positive probability by 13%, the level 30 minutes has a negative influence of 14%. For the attribute commute time (per km), the level 5 to 15 minutes was set as a baseline, the level less than 5 minutes has a positive impact by 9% and the level more than 15 minutes negative impact by 12%. The attribute one-way starting fare is highly negatively significant and the level NRs. 30 by -20%, the level NRs. 45 by -34%, and the level NRs. 60 by -48% have a significant influence on negative choice probability estimated to the level NRs. 14.

Figure 3 Average Causal Effect on the Internal Choice Probability

Constant = 0.770 Note: Cluster standard error is estimated in respondent level and horizontal bar is adjusted within 95 percent confidence interval.

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3.3 Comparative AMCE results of external and internal probability:

In the probability of internal choice, we proposed, giving the bundles of attributes of the two hypothetical policies on the improved public transport service and estimated the preference of respondents who asked the answer, *"Which is the most influencing policy among the proposed policies?"* And in external choice probability, we included the status quo search for the answer to *"Do we need a new proposed transport policy?"* The result of estimation shows that the preference trends is almost similar except the fifth attribute; for the probability of internal choice, respondents do not care for payment method. The comparative result of external and internal choice probability is presented in *(Table ....)*.

Table 2 Comparative AMCE result of External probability and Internal probability

Attributes	Levels	External (%)	Internal (%)
Mode of transport	Motorbike	(-14)	(-12)
	MRT	20	15
Waiting time	5 minutes	12	13
	30 minutes	(-12)	(-14)
One-way fare per km	NRs. 30	(-28)	(-20)
	NRs. 45	(-45)	(-34)
	NRs. 60	(-54)	(-48)
Commuting time (per km)	<5 minutes	12	9
	>15 minutes	(-12)	(-12)
Payment method	E-payment	3	

4 Discussion and policy implications

While switching to the new and improved public transport system, the attributes mode of transport as mass rapid transit, less waiting time, less commute time per km and e-payment have a clear influence on the approval of a new improved system. However, commuters are negative towards the mode of transport as a motorbike to use as public transport and the increase in fare, waiting time, commute time per km but they did not care for microbuses and taxis.

Due to the unreliable and inefficient public transport service, the users of two-wheelers i.e., motorbikes and scooters have increased rapidly in the Kathmandu Valley, which are the main challenging factors for maintaining sustainable urban mobility. This result confirms the JICA study "At present about 90% of buses are low occupancy vehicles i.e. micro/minibus in Kathmandu valley. Smaller buses should be replaced by larger ones in order to operate the public transport system efficiently. The current transport network system of Kathmandu Valley is depended on private vehicles and it will not meet the future demand, introduction of new public transport system AGT and BRT is recommended" (JICA, 2017 p. 114). As a researcher, Shrestha, Oanh, Xu and Rupakheti, (2013) claimed that low-speed bus and motorbike were the main cause of emissions in Kathmandu Valley, our finding also support their result the commuters were in favor of mass rapid transit.

From this study, we found that MRT with the low fare, less waiting time, less commute time, and cashless payment methods were the influencing attributes for switching to public transport for nearly all commuters with different backgrounds. However, the researcher (Jain, et al., 2013) found that safety is the most important criterion for encouraging urban commuters to shift from

private vehicles to public transit followed by reliability, cost, and comfort. The researcher (Chen and Chao, 2011) concluded the habitual behavior of the users of a private vehicle would somewhat frustrate an individual expectation to change from private vehicle user to mass rapid transit. In this study, individual characteristics i.e. gender, ownership of vehicles, sense of security of the current public transport, level of education etc. may affect differently for modal shift from private to mass transit. Ashalatha, Manju and Zacharia (2013) found that the mode choice behavior of commuters in the city of Thiruvananthapuram, India: preference to a car is increase with increasing the age and preference to two-wheelers decreases. Therefore, switch from private vehicles to public transit depending upon time per distance and cost per distance, in subsample analysis, with the background information the result support their findings. In the case study of the city of Kalamaria, Greece, commuters gave importance to the attribute comfort followed by fare, information provision, accessibility to a transit network (Tyrinopoulos & Antoniou, 2013). However, commuters gave comfort (i.e. MRT and negative to a motorbike) and fare almost equal preference in Kathmandu. Likewise, IBN (2017) proposed for investment in mass transit system projects i.e., MRT, LRT, BRT, Flyovers, Tunnel-ways system for the sustainable mobility of the Kathmandu Valley. This study empirically proved for the effective implementation of proposed mass rapid transit projects in Kathmandu valley. However, Pathao and Tootle have been using motorbike and scooter as public transport in Kathmandu since 2018. Legal provisions do not allow the use of two-wheelers as a public transportation service in Nepal. According to the Motor Vehicles and Transport Management Act, 1993, commercial vehicles must obtain a permit to operate and must have registered the public transport service in the DoTM but Pathao and Tootle have been operating two-wheelers without registering the transport service, which is illegal (OAGNEP, 2020 p. 304). Motorbikes are the main causes of traffic congestion, air pollution and road accident

(Shrestha et al., 2013). The result of this study supports that respondents are not in favor of two-wheelers in the city of Kathmandu.

4.1 Recommendations and policy implications

The improvement of the current public transport system is the most important and urgent agenda for the overall development of the country. Though the government has made efforts to improve the public transport service sector in Kathmandu, these efforts have not become effective. The weak capacity and authority of the regulatory body, scarce resources, weak policy enforcement, and the low participation of stakeholders are the main problems for sustainable implementation.

This empirical study indicates that commuters are in favor of a new improved public transport system. While formulating a new policy it is better to focus on the introduce of MRT with e-payment method for public transport service and consider for the low fare or other schemes such as monthly or yearly ticketing or family packages to motivate commuters to the new system. Public transport should run on a timely basis which will enhance the commuters' trust in addition to the comfort and price. This study also envisages for the effective implementation of the BRT project on the ring road, Kathmandu proposed by the IBN to consider applying the minimum fare with cashless paying method. As referring to the subsample analysis, those commuters whose permanent resident is outside of Kathmandu Valley are also preferred MRT, this shows, MRT is the best means of transport for urban mobility in other large cities as well.

4.2 Limitations and Future work

Apart from the findings from this study, some of the limitations are listed as follows:

1. The main limitation is that the study quantifies the effect of the 5 main attributes for an improved public transport service. These attributes have been developed based on literature search and a pilot survey, conducting a focus group discussion with a panel of an expert group, and including more attributes could be a solution to overcome this limitation in further research.

2. The scope of this study is to examine the preferences of commuters for the improved public transport service and does not include the cost structure of the transport infrastructure sector. Hence by including the cost structure of transport infrastructure, different results could arise.

3. This survey was conducted amongst the respondents who were waiting for public transport at stops. At the time, many of them had little time to answer. It has not included the persons who were travelling by the private mode of transport or the NMT or absent commuters at that time. The perception of users of the private mode of transport and NMT is also important for implementing a new policy.

4. Likewise, mass rapid transit is the hypothetical mode of transport, many respondents did not well identify with it. If they had well known about MRT, like other modes of transports, the result could be different.

5   Conclusion

This study is focused to examine the commuters' preference for the improved public transport service in Kathmandu valley. A choice-based conjoint experiment is applied that include 5 attributes and 17 levels which may affect any commuter preference for switching to public

transport. All five attributes have the expected significant impact on the intention to switch to enhanced public transport. The constant term for the probability of external choice is 0.728, which indicating the percentage of people who will support the new and improved public transport service is 73%. The most significant attributes are one-way fare per km and the mode of transport. Commuters are in favor of a modal shift to switching to mass rapid transport and against to motorbike. They are strongly against an increase in the current fare, waiting and commute time. However, they prefer to switch to e-payment from cash. This study is a case study and focused on the high traffic congestion area and its suburbs. the result of this study will support transport planners in formulating and implementing an effective transport policy that takes people's preferences into account policy.

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