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1	Evaluating the Satisfaction of Passengers towards Metro Rail
2	Services-Bangladesh Perspective
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#### Abstract 6

Bangladesh has launched the mass rapid transit (MRT) service for the first time in the 7

transportation sector. The MRT has significantly brought access to instantaneous 8

communication in one of the congested cities, Dhaka. Since the service is a brand-new offering 9

in Bangladesh, there is a complete gap in research in this sector. Therefore, the objective of 10

this study is to evaluate the effects of service quality dimensions on passengers? satisfaction 11

with MRT in Bangladesh. The researchers used a convenient sampling method and collected 12

primary data from 251 respondents who consumed the MRT service frequently. Using the 13

reliable software Smart PLS 3.0, the data were analyzed. The researchers have examined 14

Cronbach?s alpha, composite reliability, and average variance extracted (AVE) to test the 15

reliability and validity of the collected data. This study finds that the constructs namely 16 tangibility, responsiveness, assurance, hedonic motivation, and price value are significant in 17

determining passengers? satisfaction with MRT. Price value is more significant followed by 18

hedonic motivation and responsiveness. In contrast, statistics reveal that reliability and 19

empathy are insignificant in nature. 20

21

Index terms—passengers? satisfaction, metro rail service, service quality dimensions, bangladesh. 22

#### 1 I. Introduction 23

24 The Indian metros have most remarkably contributed to the diversion of a significant portion of current passenger 25 traffic from road to the Metros and consequently reduced the number of buses, passenger cars, and other vehicles 26 carrying passengers on its roadways (Bhagyalakshmi & Vasudevan, 2020).

Bangladesh has introduced its first metro rail journey which will contribute to making Bangladesh smart from 27 various perspectives (The Daily Star, 28 th December 2022). It also added that this mass rapid transit (MRT) 28 will reduce traffic congestion and air pollution in Dhaka city. It will enable people to move quickly from one 29 place to another. 30

Decision-makers must urgently redirect urban transportation development toward a more sustainable future 31 in order to build greener and more livable cities. The socio-economic development of a country greatly depends 32 on transportation whereas in developing countries, it's critical where accessibility and mobility are commonly 33 hampered by a lack of adequate levels of transportation services (Luke & Heyns, 2020). The management of 34

public transportation quality has become a focus of in-depth study in recent years ??Majumdar et al., 2020). 35 36 Establishing a sustainable urban transportation system necessitates an all-encompassing integrated approach

37 to decision-making with the shared objective of strengthening an inexpensive, environmentally friendly, people-38 oriented, and commercially viable transportation system ??Goldman & Gorham, 2006). Congestion is a great problem because it has a domino effect on other factors that affect the economy, the environment, and society 39 including poor air quality, traffic accidents, travel delays, and public health issues where metro rail services could 40 be a better alternative to other public transports ??Majumdar et al., 2020). 41

42

It is crucial for managers and authorities to ensure higher levels of customer satisfaction (CS) in public transportation (PT) systems ?? The country, China has introduced the world's largest high-speed rail (HSR) 43

network expecting that it would have a substantial impact on the country's mobility, accessibility, socioeconomic 44

development, and other factors, particularly at the megaregional level (Chen, 2013). etro rail transits have created
a milestone in transportation and communication advancements (Kurniawati, 2023). After London first launched
an electric train in 1890 (Duffy, 2003), highspeed trains have become an undeniable option for technological,
commercial, and socioeconomic success over the passage of time (Fowler, 2023). They also added that many
developed nations like Italy, France, Germany, Poland, Netherlands, Spain, and Switzerland have invested in
metro or high-speed railways to achieve far-reaching benefits in various aspects.

### 51 **2** M

52 Australian government emphasized greatly on highspeed rail (HRS) services for urban development 53 ??Gharehbaghi et al., 2020).

Additionally, the performance evaluation is required to take into account the top activities, stakeholder concerns, current and projected demand trends, and unmet service needs (Kuo et al., 2023). Appraisal of performance helps to ensure better economic performance, links-interactions and output from service providers and improves organizational SQ (Chan et al., 2023). Thus, the availability of adequate public transportation becomes more and more important as cities in developing countries expand, especially in big cities with rapid population expansion.

60 According to Kilibarda et al. (2016), and Ricardian to et al., ??2023), the quality of service delivery, which is 61 regarded as the most crucial factor in both consumer attitudes and customer loyalty, has a considerable impact on customer satisfaction. The first step in improving customer satisfaction is to assess the grade of the services offered 62 (Hamid & Baharudin, 2023). As a result, it is critical for public entities to create service quality standards in 63 order to provide highquality services that go above and beyond what is expected of them by the public (Dullah et 64 al., 2023). Measuring customer satisfaction with public transportation services is essential in both transportation 65 research and practice (Anburuvel et al., 2022). To boost the infrastructure, facilities, services, and demand for 66 67 public transportation, transit authorities must understand how well passenger expectations have been satisfied. 68 Customer surveys are significant because they provide transportation agencies with useful information on the specific areas with which customers are satisfied and dissatisfied ??Rong et al., 2022;Sukhov et al., 2022). Service 69 70 frequency, on-time performance, travel speed, and vehicle cleanliness are found to have the greatest effects on customer satisfaction in the tendered regions ??Singh & Kathuria, 2023;Wong et al., 2023 ??020). But, as we 71 know the MRT service is very new in our country (The Daily Star, 28 th December 2022) that's why this sector 72 still has not been conducted significant research. The authors believe that this research work is going to be 73 74 the first research on MRT in Bangladesh. Still, no research on this sector has been published. There is some news that passengers are facing various problems in getting metro rail services (The Business Standard, 29 th 75 76 December 2022). Along with that lax security at metro rail stations is raising concerns (Dhaka Tribune, 31 st 77 December 2022). The researchers made an effort to investigate the service quality characteristics and the resulting 78 passenger satisfaction with Bangladesh's metro rail services in light of these research gaps. Alike other countries, the evaluation of the service quality of metro rail or mass rapid transit can minimize the service gaps and ensure 79 80 the expected service levels from MRT. It may also help the concerned authorities to design good quality services for similar mega projects that are now under construction. 81 This raises the following research question; What are the effects of service quality dimensions on passengers' 82

satisfaction with MRT in Bangladesh? This study aims to investigate the service quality of MRT from the 83 users' perspective using the widely accepted SERVQUAL model. This study aims to-Congestion at stations, 84 relatively high-priced tickets, and the inconvenience of using transportation facilities that connect to other 85 86 modes of transportation rank as the three main causes of customers' unhappiness with MRT (Iqbal et al., 87 2022; Reyes et al., 2023). All countries need transportation for their social and economic growth, but developing countries are especially dependent on it because mobility and accessibility are usually restricted due to insufficient 88 levels of transportation services (Luke & Heyns, 2020). The development of the transportation infrastructure 89 is essential to the development of wealthy communities (Fantin & Appadurai, 2022). Congestion, along with 90 related issues including pollution, accidents, dwindling public transportation, and environmental deterioration, 91 characterizes the city's transportation system today, ticketing system (Anburuvel et al., 2022; Farazi et al., 2022). 92 Reliability, frequency, price, speed, access, comfort, and convenience also found themselves significant in rapid 93 transit networks (Kepaptsoglou et al., 2020). 94

demanding a premium on rapid and safe transport (Pojani & Stead, 2015).

Customer satisfaction is an evaluation of the requirements and expectations of the products and services 96 97 each service provides ??Li et al., 2023).Customer satisfaction refers to a good fit between customers' 98 expectations of a particular product or item and the performance of that product ?? Customer satisfaction has a 99 positive effect on actual behavior related to the use of technological services (Camilleri et al., 2023;Park & Kim, 100 2013). The integration of customer satisfaction has shifted business philosophies from product orientation to customer orientation due to technological advancement (Qalati et al., 2020). They also concluded that it is quite 101 difficult to retain customer happiness while addressing all of their needs. Additionally, "customer satisfaction" 102 has been often employed in business literature, especially in the fields of marketing and finance (Yi & Nataraajan, 103 2018) The number of research areas using the SERVQUAL model to explore passengers' satisfaction with Metro 104 Rails is not significant in nature. Along with that, as this is a totally new service area in Bangladesh, there has 105

not been much research done yet. To bridge this research gap, researchers have been interested in conductingresearch in this area.

# <sup>108</sup> 3 III. Conceptual Framework and Hypothesis Development a) <sup>109</sup> The use of SERVQUAL and UTAUT2 (Two factors from <sup>110</sup> UTAUT2-Hedonic Motivation and Price Value) in assessing <sup>111</sup> Service Quality

The method most often used to measure consumer perceptions of quality in the service industry is SERVQUAL, which was created by Parasuraman et al. (1985Parasuraman et al. (, 1988Parasuraman et al. (, 1991)). Over the past 50 years, research on service excellence and customer satisfaction has generated a significant amount of literature (Aseres and Sira, 2020). The value of service quality in the travel sector was discussed in earlier literature, which has become increasingly popular in academic study circles **??**Cheunkamon et

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Now, passengers are more dependent on the most recent metro rail steering system in the current circumstances 119 because of machine life and modern growth. This approach performs a better job of assisting people to plan 120 their day and get them to their destination on time (Yen et al., 2023). Considering the significance of metro 121 122 transportation, it must offer high levels of comfort to both staff and passengers (Ding & Hou, 2022). Almost 123 3.08 million people use the community train and the network of mass rapid transit lines every day to connect the city's center and its surroundings (Liu et al., 2023). Given that the majority of respondents use metro 124 125 services to reach their destination, a better and more efficient system of ticketing and information about train arrival and departure should be required. Also, it is crucial to boost security during the trip to eliminate petty 126 crime and other offenses (Nguyen & Pojani, 2023; Leoni & Owen, 2023). Evaluating the factors that diminish 127 commuter satisfaction and steadfastly measuring them have become requirements for MRT organizations in an 128 effort to implement the necessary improvements based on commuters' knowledge and needs (Bhagyalakshmi 129 & Vasudevan, 2020). Customer satisfaction and service quality dimensions have typically drawn researchers' 130 131 attention, according to the researchers and one of the fundamental approaches to improving customer satisfaction 132 is the ongoing improvement of service quality dimensions (Hoo et al. ??023) as one of the influential models in 133 service quality. The model, also known as the RATER Model, was developed by the researchers to address five constructs (Ravichandran et al., 2010). They are responsiveness, empathy, tangibility, assurance, and reliability. 134 To increase customer satisfaction, service providers should make sure that the expected and perceived services 135 are consistent (Ahrholdt et al., 2017). The results of the prior study also suggested that, depending on the 136 type of research being conducted by the researchers, the SERVQUAL model would need to be updated (Ali 137 & Raza, 2017). Examining the critical and determining elements that influence Bangladesh's MRT service 138 consumers' happiness is the goal of this study. It has done this by placing a strong emphasis on tangibility, 139 dependability, responsiveness, assurance, and empathy. Despite the above-mentioned research, there are not 140 many applications in the field of public transportation, and (to our knowledge) no attempt has yet been made 141 142 to create a framework for the service quality measurement using a SERVQUAL technique in MRT service in Bangladesh. Bridging this gap could be quite beneficial for MRT agencies, especially those that are willing to 143 comply with the standards as stated. Kalini? et al. (2019) found that the UTAUT2 model is a significant 144 tool to measure customer satisfaction. This model has found its ability to predict the intention and customer 145 satisfaction toward a market offering (Barbosa et al., 2021). In the public transportation sector, the UTAUT2 146 model determines the performance levels of service providers and users' satisfaction critically ??Korkmaz et al., 147 2023). Venkatesh et al. (2012) added three independent constructs-hedonic motivation, price value, and habit-148 with this model. Hedonic motivation and price value are the salient variables in ensuring commuters' satisfaction 149 (Chopdar et al., 2022). Keeping relevance with these findings, the researchers have taken price value and hedonic 150 motivation along with SERVQUAL model dimensions to evaluate the satisfaction of MRT passengers. 151

152 The following constructs are included in the study model in Figure 1: ii. Reliability The ability of the service provider to deliver the promised service precisely and dependably is referred to as reliability (Parasuraman et 153 154 al., 1988; ??asanthi et al., 2023) for instance, metros are punctual in their arrival and departure (Jayanthi et al., 155 2023). Octavines et al. (2023) assert that reliability is a representation of a customer's dedication, promptness, 156 and relevance in obtaining satisfaction. Some recent studies found that the reliability attribute has the greatest impact on customer satisfaction ?? Christian et ?? 023) discovered that responsiveness is a crucial element of the 157 quality of e-services that affects client satisfaction. In light of these findings, this study posits that the authors 158 perceive that the responsiveness dimension will affect the passengers' satisfaction with MRT. So, the hypothesis 159 is designed as below-160

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The tangibility dimension of service consists of the physical appearance of the service facility, the equipment, 163 the personnel, and the communication resources. For example, the appearance of MRT, public phones, stations, 164 and so on (Parasuraman et al., 1988; Thomson et al., 2023). The service facility's physical attributes, as well 165 as its equipment, personnel, and communication resources, are considered tangibles (Parasuraman et al., 1988; 166 ??amzah et al., 2023). For example, the installation of public phones, metro stations, etc. The study team by 167 Arteaga-Sánchez et al. (2020) found evidence from the transit industry that tangibility has a big impact on 168 consumer satisfaction. The researchers focused on Indian transit services when they discussed service quality 169 and customer satisfaction in the context of South Asia ??Singh & Kathuria, 2023). The tangible elements of 170 services have a positive impact on customer satisfaction, and the results of a recent study show that the degree to 171 which the service quality component is tangible has a significant impact on customer satisfaction (Aseres & Sira, 172 2020; Hussein, 2016; Al-Mhasnah et al., 2018). Therefore, this study assumes that the tangibility dimension will 173 affect the passengers' satisfaction with MRT. Thus, the following hypothesis has been drawn. ??023). Hence, 174 this study supposes that the assurance dimension will affect the passengers' satisfaction with MRT. Accordingly, 175 the hypothesis here is between customer satisfaction and the empathy construct of service quality (Ananda et 176 al., 2023; Putta, 2023; Jou et al., 2023). Thus, the authors daresay that the empathy dimension will affect the 177 passengers' satisfaction with MRT. Therefore, the proposed hypothesis is as follows-H5: Empathy has a positive 178 relationship with passengers' MRT satisfaction. 179

### 180 6 vi. Hedonic Motivation

Hedonic motivation is the idea that people get certain benefits from an event they find enjoyable, pleasurable, 181 multisensory, emotional, and thrilling (Hirschman and Holbrook 1982: Venkatesh et al., 2012). Offering all 182 passengers this kind of experience is one of the foundational elements of transport and destination services ?? Chen 183 et ). It's also added that in order to increase traffic security as well as commuters' satisfaction for all, stakeholders 184 need accurate methods for assessing the emotional states of travelers. Hedonic motivation measurement has been 185 usefully used in the travel domain. The researcher also mentioned that the Satisfaction with Travel Scale (STS) 186 is linked to Hedonic motivations, which are connected to core affect (emotions) and cognitive evaluation. In line 187 with this, Liu et al. (2021) commented that the subject of mobility and transportation has become increasingly 188 189 interesting in studies that link commuting and hedonic well-being. They discovered that certain combinations of personality traits and modes of transportation are connected to the commuter experience and hedonic well-being. 190 Since these studies used hedonic motivation to identify passengers' satisfaction and found the results positive, 191 the authors also assume that hedonic motivation will positively affect the satisfaction of passengers with MRT. 192 Therefore, the following hypothesis has been drawn. H6: Hedonic motivation has a positive relationship with 193 passengers' MRT satisfaction. vii. Price Value et al., 2023). Furthermore, it creates a significant user perception 194 around the relationships between benefits and costs leading to adopt travel services (García de Blanes Sebastián 195 et al., 2023). As the PV construct has been used in identifying passengers' satisfaction in these earlier studies, 196 the authors perceive that this construct will also positively affect the satisfaction of passengers with MRT in 197 Bangladesh. Hence, the authors posit that: H7: Price value has a positive relationship with passengers' MRT 198 satisfaction. 199

### <sup>200</sup> 7 IV. Methodology a) Research Design

201 The previous studies adopted both qualitative ??

### <sup>202</sup> 8 b) Measurement

The UTAUT2 model (Venkatesh et al., 2012) and the SERVQUAL model (Parasuraman et al., 1985) were taken 203 into consideration when designing the study's variables and creating the questionnaire to gauge MRT passengers' 204 satisfaction. The study's questionnaire was prepared after examining the expert's advice and recommendations, 205 206 the passengers' perspectives, and a pretest. Tangibility, dependability, assurance, empathy, and responsiveness 207 are SERVQUAL model aspects that are also referred to as RATER model characteristics (Ziyad et al., 2020). 208 The remaining variables, hedonic motivation, and price value are obtained from Venkatesh et al. ??2012). 209 According to the specifications of the setting of the current investigation, every element from these models has been altered. The researchers employed a five-point Likert scale. The scale ranges from strongly disagree (1) to 210 strongly agree (5). On the basis of these scales, every construct has been examined. The questionnaire is broken 211 up into two sections, the first of which covers all of the items and constructs and the second of which covers the 212 sociodemographic characteristics of the chosen respondents. 213

214 The Partial Least Square-structural equation modeling method was employed by the researchers in

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The price value (PV) is defined as the customers' cognitive tradeoff between the perceived benefits and monetary 220 cost of using a product or service (Venkatesh et al., 2012). PV significantly affects passengers' intentions to 221 consume autonomous public transport services (Korkmaz et al., 2022). Additionally, in the case of Uber-based 222 transportation systems, PV is regarded as a significant construct in instigating the passengers' intentions to 223 take ride-sharing services (Soares et al., 2020). The MRT mustensure a good price value tradeoff to satisfy the 224 passengers significantly (Yan this study, which was carried out using SmartPLS software 3.0. This statistical 225 technique is used to assess the constructs' discriminant validity, path coefficients, validity and reliability of the 226 constructs, and structural model. In the case of exploratory research, researchers regularly used SmartPLS, 227 especially in the marketing sector ??Hair et al., 2012). 228

### <sup>229</sup> 12 c) Target Population

As the study context is the MRT in Bangladesh, the target population is the users of MRT in Bangladesh. The persons who traveled by MRT frequently are mainly targeted in this study since they could scale in-depth insights and experience with MRT. The population of this study includes people who have traveled by the MRT several times.

### <sup>234</sup> 13 d) Questionnaire Design and Pretesting

The data was collected by an in-person survey using a closed-ended structured questionnaire using a five-235 point Likert scale ranging from strongly disagree (1) to strongly agree (5) (Emerson, 2015). Furthermore, 236 the respondents' confidentiality and anonymity were protected by the researchers. The researchers provided an 237 introduction before the survey began and explained why it was being conducted. 290 questionnaires were supplied 238 239 to the respondents where 39 questionnaires were found incomplete in getting actual responses. 251 surveys were 240 found to be full and suitable for statistical analysis, and the response rate of 86.55% met the benchmark or general guideline for the Smart PLS procedures, according to the researchers (Urbach & Ahlemann, 2010). We 241 collected our data from March to October 2023 (eight months). For better and more insightful understanding 242 we prepared the questionnaire in both English and Bengali languages. 243

Before beginning the primary data collection process, we conducted two rounds of pre-testing on our questionnaire. Two subject-matter experts extensively examined the study questionnaire's first draft. In the following stage, 30 MRT users pretested the questionnaire. We moderated our questionnaire accordingly. Finally, 247 24 items that are the best fit for the questionnaire were retained.

### <sup>248</sup> 14 e) Sample Size, Sample Technique, and Data Collection

obtain the needed sample size for the research (Aseres & Sira, 2020). The convenient sampling technique is appropriate when a large sample size is required for generalization (Tsiotsou, 2015) and it makes the data collection quick and easier (Senyo & Osabutey, 2020). The authors collected data from MRT stations, their waiting areas, and inside the metro rails.

The confidence level in this study's methodology is set at 95%. Information for secondary sources was gamthered from prior publications, including papers, books, online sources, and others. Despite this, the researchers chose a deductive method over an inductive one because the study's base was an established theory of the Bangladeshi context (Ziyad et al., 2020). SMART-PLS 3.00 was used to evaluate the data.

### <sup>257</sup> 15 V. Findings and Analysis a) Demographic Profile

From table-01, it's been seen that most of the respondents are male passengers (74.90%) followed by female passengers (25.10%).Furthermore, the majority of the respondents (38.25%) fall in the age group of 24-30 years followed by 31-37 aged respondents (29.89%). Besides, the majority portion of the respondents (43.03%) are undergraduates followed by graduates (34.26%). The income range of the majority of respondents (39.44%) is between 20,001-30,000 taka per month. In addition to that the most significant number of respondents (56.97%) have used MRT services more than 10 times in their journeys.

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This study has focused on a field survey to evaluate the satisfaction of MRT passengers in Bangladesh. Dhaka city has been taken into consideration as the MRT is functioning only in this city in the country. The sample-tovariable ratio should not be less than 5:1, even though a 15:1 or 20:1 ratio is preferred ??Hair et al., 2018;Liao et al., 2016;Yeoh et al., 2016;Forsberg & Rantala, 2020).In light of these references, the minimum sample size in our study should be 20\*8=160. The non-probability convenience sampling technique is considered by the researchers to

### <sup>275</sup> 19 Source: Authors' calculation b) Measurement Model

All of the suggested constructs have Cronbach's alpha and composite reliability values of more than 0.7, which 276 is considered acceptable (Fornell & Larcker, 1981; Table-02), which is in the range. The outer loadings value 277 should be equal to or more than 0.7 but in exploratory research values of 0.5 to 0.6 even could be acceptable 278 (Chin, 1998). Cronbach's alpha is used to measure the internal consistency of the data. The range of acceptable 279 Cronbach's alpha values, in this case, is from 0.701' to 0.842. Given that the values are more than 0.7, this 280 study complies with the requirements for outer loadings. Cronbach's alpha and composite reliability have both 281 been examined in order to guarantee the data's dependability. To further confirm the accuracy of the data, the 282 average variance extracted (AVE) has been carried out. The values of CR and AVE should be equal to or higher 283 than 0.7 and 0.5, respectively (Hair et al., 2014). These parameters are easily met by our results, which provide 284 a strong fit of the data dependability with CR values ranging from 0.832 to 0.894 and AVE values ranging from 285 0.524 to 0.683. Because all VIFs values are below the required levels, which are lower than 5 (Hair et al., 2014), 286 the results of this investigation are within acceptable ranges. 287

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### <sup>290</sup> 21 c) Common Method Variance

The researchers conducted Harman's singlefactor test on the questionnaire items to check whether there is any common method variance (CMV). The 30 survey questions were placed onto a single factor. The additional factor was not a component of our study framework; it was just added for analytical purposes and eliminated subsequently. According to Table 01, fewer than 50% (34.56%) of the variance could be explained by a common component, indicating that the items did not contain CMV (Eichhorn, 2014). Along with this, Hong et al. (2023) claimed that if the VIFs results are equal to or lower than 3.3 (see Table 02), then we could recommend that the findings are not affected by the common method bias.

The researchers have applied Fornell & Larcker's (1981) discriminant validity test to measure the relationships or validity among the proposed constructs in this study. The discriminant validity is thoroughly examined by taking into account the square roots of AVE values and the correlations between the components (Chiu & Wang, 2008). The statistics for discriminant validity in table-03 demonstrate that convergent validity and discriminant validity both support the correlations between the components.

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### 305 23 VI. Discussion

The study tends to evaluate the satisfaction of MRT passengers in Bangladesh. Using five dimensions of 306 SERVQUAL and two dimensions of UTAUT2 the study has designed the methodology to explore the satisfaction 307 308 of MRT passengers. The dimensions are tangibility, reliability, responsiveness, assurance, empathy, hedonic 309 motivation, and price value. Among the dimensions, reliability, and empathy do not significantly affect passengers' 310 MRT satisfaction. All Therefore, the policymakers of MRT should focus on ensuring the creation and maintenance 311 of tangibility to reap the benefits of MRT through passengers' satisfaction. Reliability in this study is found to have insignificant effects on passengers' satisfaction whereas the other studies found it as the significant one 312 (Aseres & Sira, 2020; ??orsu and Yeboah, 2015). The authorized stakeholders should focus on generating a 313 significant level of reliability to ensure a higher level of passenger satisfaction with MRT. According to our study, 314 responsiveness has a considerable favorable effect on passengers' satisfaction. This finding is also supported by 315 earlier studies ?? So, to make it more productive, the authority should milk this construct. Hedonic motivation 316

has got special attention from the passengers of MRT. This construct has also a significant positive impact on their MRT satisfaction. Our findings are also strongly supported by other previous studies ??Liu et

### <sup>319</sup> 24 VII. Theoretical Implications

This study can contribute new knowledge to the MRT sector. It can also input new insights into the literature on 320 the SERVQUAL model dimensions and the dimensions of UTAUT2 in exploring the satisfaction of passengers with 321 MRT services. Hedonic motivation and the price value can be viewed as important characteristics in addition 322 to SERVQUAL model dimensions including tangibility, reliability, responsiveness, assurance, and empathy to 323 measure the satisfaction of customers in a particular field, especially in the MRT sector of Bangladesh. The 324 proposed theoretical model in this study has a significant impact on evaluating passengers' MRT satisfaction. 325 The price value and hedonic motivation constructs have significant positive impacts on passengers' satisfaction. 326 In contrast, the empathy and reliability constructs exert insignificant impacts on passengers' satisfaction. 327

### 328 25 VIII. Practical Implications

The policymakers in the MRT area could get significant insights to design and improve the levels of service and 329 passenger satisfaction. They can improve the level of service dimensions to ensure the satisfaction levels of MRT 330 passengers in a great manner. Responsiveness, hedonic motivation, and price value are found the most significant 331 factors in ensuring passengers' satisfaction with MRT. So, the policymakers can shed light on these areas. In 332 addition to that the empathy and reliability dimensions should get special attention so that the passengers would 333 get them as the significant dimensions in the case of satisfaction with the MRT experience. As the tangibility 334 has a significant impact on passengers' MRT satisfaction the authority must add more features to make the 335 service tangible enough and it should be maintained with care. The assurance should also be important to satisfy 336 the MRT passengers. The MRT sector can take the initiative to excel in service quality by emphasizing all 337 338 SERVQUAL factors and two factors namely price value and hedonic motivation from UTAUT2. This sector can train its personnel to interact with passengers, keep track of its progress, and examine passengers' reviews to 339 scale a good quality of its service. The authority should maintain better tangibility in its service from various 340 perspectives. The MRT service sector should also create reliability in the service areas. Passengers must embrace 341 responsiveness while traveling through the MRT. This sector must design assurance and empathy as per the 342 expectations of the passengers and maintain for constantly. To ensure a pleasant journey, the sector could focus 343 on building a concrete Hedonic motivation with MRT. Additionally, as price and satisfaction stand together, this 344 sector must provide a significant dive into the price factor. 345

### 346 **26 IX.** Conclusion

MRT service in Bangladesh is completely a new addition to the transportation field. Evaluating its service quality
and passengers' satisfaction could find out the required areas to improve and offer the best possible services to the
passengers. The concerned authority also can utilize the insights from this study in other related mega projects
in Bangladesh. Using SERVQUAL and UTAUT2 model's dimensions could generate a deep understanding of
user satisfaction levels and

### <sup>352</sup> 27 X. Limitations and Future Research Direction

This study has met some limitations from different perspectives. The respondents are mostly young and students 353 at different levels. So, the specification in the demographic profile might generate new findings. The non 354 probability convenient sampling technique has been taken into consideration to collect the data where other 355 sampling techniques might make different results. Furthermore, a few MRT stations have not yet been launched. 356 Passenger satisfaction ratings may be the same, lower, or higher than the current figures when all stations are 357 operating at full capacity. In addition to that, a bigger sample size might be a better representative of all 358 passengers traveling through the MRT frequently. Along with the proposed constructs, further research could be 359 conducted considering several other reasonable constructs. Finally, the continuous usage intention of passengers' 360 1 2 MRT service might be another study area. 361

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Figure 1: 1 ©

Variables	N	Percentage (%)						
Gender								
Male	188	74.90						
Female	63	25.10						
Ages (in terms of years)								
17-23	39	15.54						
24-30	96	38.25						
31-37	75	29.89						
38-44	23	9.16						
45- Above	18	7.16						
Level of Education								
Up to Secondary	12	4.78						
Higher Secondary	11	4.38						
Undergraduate	108	43.03						
Graduate	86	34.26						
Postgraduate	34	13.55						
Income (BDT)-Monthly								
Below 20,000	79	31.48						
20,001- 30,000	99	39.44						
30,001- 40,000	62	24.70						
Above 40,001	11	4.38						
Frequency of using MRT								
4-6 times	40	15.94						
7-9 times	68	27.09						
More than 10 times	143	56.97						

Figure 2:

Constructs	Items	Items'	VIFs	Cronbach's	Composite	AVE	R <sup>2</sup>	
		Loadings		Alpha (β)	Reliability			
Tangibility	TAN1	0.866	1.240	0.842	0.894	0.683	-	
	TAN2	0.778	1.165					
	TAN3	0.798	1.212					
Reliability	REL1	0.708	1.585	0.772	0.845	0.598.	-	
	REL2	0.776	1.086					
	REL3	0.752	1.132					
Responsiveness	RES1	0.850	1.171	0.832	0.876	0.658	-	
	RES2	0.792	1.280					
	RES3	0.766	1.152					
Assurance	ASS1	0.852	1.217	0.753	0.856	0.667	-	
	ASS2	0.781	1.470					
	ASS3	0.825	1.483					
Empathy	EMP1	0.748	1.530	0.801	0.860	0.567	-	
	EMP2	0.725	1.479					
	EMP3	0.780	1.720					
Hedonic	HMV1	0.727	1.248	0.701	0.832	0.623	-	
Motivation	HMV2	0.853	1.199					
	HMV3	0.795	1.433					
Price Value	PRV1	0.720	1.410	0.765	0.851	0.524	-	
	PRV2	0.748	1.488					
	PRV3	0.820	1.004					
Satisfaction	STF1	0.784	1.349	0.787	0.863	0.609	0.598	
	STF2	0.817	1.278					
	STF3	0.758	1.260					
Variance explained by Harman's single factor test 31.59%								

Figure 3: Figure 1 : 4  $\ensuremath{\mathbb{C}}$ 

	Constructs	TAN	REL	RES	ASS	EMP	HMV	PRV	STF
	TAN	0.826							
	REL	0.524	0.773						
	RES	0.702	0.632	0.811					
	ASS	0.602	0.612	0.547	0.817				
	EMP	0.532	0.628	0.562	0.621	0.753			
	HMV	0.585	0.590	0.502	0.627	0.657	0.789		
	PRV	0.487	0.387	0.423	0.469	0.579	0.425	0.724	
5[	STF	0.295	0.192	0.217	0.287	0.325	0.388	0.393	0.780

Figure 4: H3: 5 ©

Constructs	TAN	REL	RES	ASS	EMP	HMV	PRV	STF
TAN								
REL	0.684							
RES	0.770	0.654						
ASS	0.688	0.600	0.778					
EMP	0.736	0.520	0.660	0.632				
HMV	0.787	0.790	0.685	0.452	0.777			
PRV	0.802	0.604	0.748	0.632	0.780	0.524		
STF	0.584	0.768	0.669	0.784	0.776	0.452	0.762	

Figure 5:



Figure 6: I Year 2023 8 ${\ensuremath{\mathbb C}}$ 

Direct	Path	Sample	Standard	Т	Р	Comments
relationships	Coefficients	Mean	Deviation	Statistics	Values	Supported
	(β)					(√)
						Not
						Supported
						(×)
H1: TAN -> STF	0.173	0.198	0.081	1.967	0.003	$\checkmark$
H2: REL -> STF	0.063	0.011	0.073	0.060	0.450	×
H3: RES -> STF	0.221	0.258	0.065	2.124	0.007	$\checkmark$
H4: ASS -> STF	0.197	0.186	0.085	2.506	0.001	$\checkmark$
H5: EMP -> STF	0.052	0.013	0.071	0.556	0.354	×
H6: HMV -> STF	0.245	0.297	0.055	2.274	0.042	$\checkmark$
H7: PRV -> STF	0.272	0.221	0.076	2.802	0.032	$\checkmark$

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Figure 7: I Year 2023 9 © 10 ©

al., 2023; Luo et al.,

2023; Shamsudin et al., 2023). The reliability construct has a positive and significant impact on customer satisfaction, according to similar findings (Conceicao et al., 2023; Cebeci et al., 2023). Eventually, the authors perceive that the reliability dimension will affect the passengers' satisfaction with MRT. Hence, the following hypothesis is as follows-H2: Reliability has a positive relationship with passengers' MRT satisfaction. iii. Responsiveness Response time, as demonstrated by having service employees on call (Awasthi et al., 2011), demonstrates how flexible and timely the service provider is (

#### Figure 8:

01

Figure 9: Table 01:

 $\mathbf{02}$ 

Figure 10: Table 02 :

 $\mathbf{05}$ 

Figure 11: Table 05 :

Figure 12:

Figure 13:

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