

Enhancing Tourist Awareness and Preferences Through eBECA: A Digital Empowerment Approach

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ABSTRACT

This study explores the influence of social media information, knowledge and attitude on tourist awareness and preference for eBECA an electric trishaw-based mobility intervention created to enhance sustainable urban tourism in Melaka. The study adopts a quantitative methodology for this purpose, survey data were collected from 212 participants who are familiar with smart tourism systems. Results of the statistical test namely correlation and regression show that the information, knowledge and attitude towards social media jointly account for 86.4% of variation in tourist preference. The results imply that tourists' knowledge and preferences are heavily affected by their exposure to digital information and positive environmental attitudes. Additionally, digital literacy and promotion of sustainable mobility websites like eBECA increase tourists' intension in adopting green transportation modes. It adds to the literature on smart tourism by showing that digital literacy and technology-based strategies can encourage environmentally friendly travel behavior. Suggestions are made to clawback soft power by linking up social media engagement, education on sustainability and inclusive digital design in aid of more robust tourist judgements, and sustainable tourism development in heritage cities.

Keywords: eBECA, Tourist Preference, Digital Awareness, Social Media, Sustainable Tourism, Melaka, Malaysia

INTRODUCTION

Travel and tourism in the age of techno-digital innovation is changing fast as new technologies modify how destination planning, consumption, and evaluation are performed [6]. Knowledge is important in determining tourists' choice of destination, as it influences their perception of destination image, service quality and overall satisfaction [1]. Social media has emerged as one of the predominant sources of travel-related information, experiences and electronic word-of-mouth (e-WOM) in recent years, facilitating travelers to be more informed and value-centered decision makers [11]. In this context, taking the electric trishaw as a starting point where eBECA was first implemented in Melaka is an innovative approach to addressing sustainable tourism mobility as well as cultural conservation [18]. Which aims to decrease the dependency of private vehicles and increase visitors' accessibilities, comfort and environmental consciousness. Research revealed that such public transport innovations have an impact on tourists' mode choice, satisfaction and destination behavior, especially if it is combinable with digital services which encourage sustainable thinking and local culture [6].

For heritage tourism, it is shown that eBECA a sustainable, electric trishaw-based mobility mode in historic cities has the potential to improve convenience and lifetime experience of tourist as well as promoting environmental friendly transportation and cultural authentic for the visitors [19]. In addition to this, the incorporation of digital consciousness and tourist-focused service enhancements in eBECA applications can also enable tourists to learn taking travel decisions [19].

Recent research on intelligent transportation systems shows that integrating GPS tracking and IoT-based technologies significantly improves passenger safety, real-time vehicle monitoring, and operational efficiency in managed transit environments [3]. Another study established an E-Rickshaw management system to plan rides according to passenger needs, supporting the idea of smart cities. However, issues with e- rickshaws include the lack of charging stations and the use of IoT-enabled GPS systems for real-time tracking and battery life information [27].

Lack of knowledge about regional traditions, cultural practices, and ecological issues can result in unintentional disrespect for local communities and landscapes, leading to unsustainable tourist practices like over tourism and cultural appropriation leading to unsustainable tourist practices and weakening of local cultural integrity when visitors lack an understanding of local traditions, cultural practices, and ecological values [10]. In particular, the integration of digital platforms tailored for sustainable mobility services such as E-Beca not only provides transport solutions but can also serve as channels for spreading awareness and enhancing tourist preferences when they are supported by relevant digital content and interactive information [19].

In order to make the niche range of travel options better accessible and understood, it is necessary to overcome the lack of comprehensive and trusted information [24]. Studies demonstrate that enhanced quality of tourism information, such as relevance, completeness and accuracy significantly increases destination attitudes and intention to visit among tourists that allows for more informed travel decisions [14]. Contrary, the influence on tourists' awareness and preferences in eBECA as digital channels is little studied when it comes to how user generated content and social- media, combined with knowledge of wildlife manage to affect attitudes.

This study aims to discuss the tourists' lack of knowledge about their preferences and their ability to choose when traveling. Given that tourists with less awareness tend be unable to make desired and satisfactory travel decisions [9], they cannot learn about their destination effectively to form environmentally friendly intentions. Tourism promotion in the classical way does not always consider many dedicated places that tourists never gets shown, and are therefore "hidden gems" for new experiences.

Consequently, the present research seeks to examine the awareness generation process for promoting tourist preferences among university students. The limitations of the study may be short period of investigation and some challenges in data collection by reason ad information that based on respondents, and the researcher perception. But the study is important because it's looking at how technology plays a part in both information spread and personalized recommendations. Progress in mobile apps, virtual reality and artificial intelligence can help deliver personalized guidance to tourists through new itineraries or information resources, which generates novel tools and platforms that serve for tourist support.

LITERATURE REVIEW

Tourist Preference

Tourist preference is a psychological propensity of travelers to select destinations, services or activities which are more suitable for its personal needs and expectations. Service-related behavior is derived from a blend of internal motivations, experiences and perceptions as well as influences from the environment such as destination image, service quality and cultural attractiveness [18]. There's also the fact that preferences change and adapt, depending on what sort of environments travelers have been in, and what technological advances they've adopted [7]. Knowledge of tourist preference is important for tourism planners and service providers because it influences tourists' decision making, satisfaction, and revisit intention [18]. In the digital age when tourists are accustomed to using their mobile phone for information search and social media for word-of-mouth referral, choices are more likely to be determined by digital communication and technological convenience that change the way they travel [8].

Recent studies have shown that tourist preferences increasingly reflect sustainability-oriented values, with travelers prioritizing eco-friendly practices and environmental conservation over traditional tourism motivations [9]. For instance, a 2025 study using the Kano model in Central Europe found that tourists place the highest value on sustainable practices such as environmental conservation, wildlife protection, and waste reduction

classifying these as essential (“Must-be”) attributes influencing satisfaction [24]. This indicates a broader shift toward environmentally responsible travel decision-making.

Similarly, changing visitor behavior and post-pandemic recovery have been observed in regional studies. An investigation in Barili, Cebu revealed that domestic tourists increasingly prefer nature-based and adventure tourism, showing a resurgence of local tourism and a heightened interest in environmental sustainability [5]. These findings align with global patterns indicating that post-COVID travelers are more inclined toward authentic, less crowded destinations and experiences that balance recreation with ecological awareness.

Moreover, technological integration has become a major determinant of tourist choice. Studies highlight that the use of social media data and artificial intelligence can predict and understand leisure travel preferences, reflecting the increasing role of digital engagement in influencing traveler decisions. A 2025 analysis combining cross-cultural social media data with predictive modeling demonstrated that digital footprints can effectively map emerging tourist behavior patterns and forecast preference shifts across regions [25]. This digital transformation reshapes how destinations attract and retain tourists through personalization and targeted engagement.

In addition, demographic factors influence preference formation, particularly among youth and senior travelers. Youth tourists exhibit strong preferences for social, experiential, and adventure-based travel activities that emphasize personal growth and cultural immersion, whereas senior tourists prioritize comfort, accessibility, and health-oriented amenities. A recent scoping review protocol emphasized the need to map and understand accommodation preferences among senior tourists to enhance inclusivity and design tailored experiences [8].

Finally, destination image and local culture continue to play a critical role in preference development. In the context of heritage and cultural tourism, tourists increasingly seek meaningful, community-based experiences that promote mutual respect and learning. As shown in studies from 2024 and 2025, sustainable practices, environmental conservation, and cultural authenticity are now integrated into the preference frameworks of most modern travelers, reflecting a global trend toward responsible tourism [23].

Digital Awareness in Tourism

Digital awareness becomes one of the core characteristics of modern tourism behavior, that is tourists' capabilities to effectively search for online information before and during travel. The proliferation of smart mobile phones and travel applications has led tourists to directly use digital services for planning trips, comparing destinations and retrieving spatially relevant information on-the-spot [16]. Research has shown that tourists with a high level of digital literacy are more self-assured and effective in their choices thus, minimizing uncertainty while improving the satisfaction experienced towards chosen destinations or services.

Recent findings have demonstrated so far, digital literacy is particularly crucial in the context of novel tourism systems, such as eBECA that combine GPS with reservation technology and on-site interactive user guidance. The digital readiness of tourists has the potential to enhance the awareness of eBECA capabilities resulting in enhanced value-based engagement and satisfaction with the urban tourism mobility systems [19]. Their research shows the way in which digital interfaces and online tools reinforce travelers' cognitive recognition of accessibility and convenience at a destination.

Beyond its functional role, digital mindfulness plays into sustainable tourism decision-making. Tourists knowing about ecologically friendly options from a digital perspective are expected to opt more for eco-sensitive travel options, supporting sustainable tourism (Bekele & Raj, 2024). Similarly, [18] found that the more relevant environmental characteristics of eBECA are displayed in a mobile app and through social campaigns, the tourists' awareness then increases regarding low carbon travel modes and influences them to adopt sustainable transport services.

Overall, digital awareness increases decision quality by translating technological information into behavioral choice. As studies by [19] and [20] state, individuals with higher levels of digital literacy and information consciousness can align their travel decisions upon personal and environmental values. Therefore, educating digital awareness is critical to creating responsible, educated and tech-savvy tourists in the current new travel environment.

Social Media and e-WOM in Tourist Decision-Making

In this line, social media has changed the way people get and judge information and it is now essential in intercommunication between destination managers, tourists and providers of tourism services. Social networking added value to tourist destinations. User-generated content, reviews and influencer storytelling illustrate that platforms such as Instagram, YouTube and TikTok are increasingly central to the formation of destination image and the tourist gaze [15]. These social networks of tourism have emotional involvement on the community members regarding travel intendance; visitors interpret peers' authentic experiences before deciding [18].

Recent research associates social media-engagement with awareness of smart tourism systems. [19] indicates favorable online reviews and e-WOM for the technological convenience and sustainability of eBECA can enhance tourists' intentions to use when planning their trip journey adopting the electric trishaw. The research highlights how digital content on social media contributes to enhancing awareness and perceived value of new mobility solutions.

Furthermore, social media enhances trust building and decreases perceived risks during travel decision-making. According to [18], tourists who have access to informational as well to experiential content on innovative products such as eBECA report higher levels of trust in digital tourism offerings. This is also consistent with the findings of [15] the influence of social media information perceived to be credible generate a sense of familiarity and influence in tourist choice process through virtual word-of-mouth mechanisms.

In essence, social media operates not as a marketing tool but as an awareness enhancing ecosystem that drives behavioral change. The cross over between social media marketing and tourism innovation, as proposed in [19] paves the way for technology enabled sustainable tourist growth that focuses on accessibility, customization and experience sharing.

Knowledge and Attitude Factors in Tourism Behavior

Knowledge and attitude reflect key factors affecting tourist decision making and satisfaction. Tourists with richer objective knowledge of destinations will generate an accurate perception and evaluate experience critically for making travel decisions [20]. Attitude, however is more of a tourist's emotional and evaluative mindset toward the destination which influences tourist behavioral intentions and loyalty [12].

In recent studies, [18] noted the influence of technology literacy on tourists' acceptance level for new mobility services. Using the Innovation Diffusion Theory, they find that perceived relative advantage and compatibility of eBECA were significantly associated with positive attitudes towards sustainable transport. Similarly, [19] examined tourists who were more experienced with eBECA features (design, safety and the environment), they held stronger attitudes to support pro-ecological travel attitudes.

Furthermore, attitude is a critical moderator in the path from knowledge to intention. [12] was found that the attitude based on prior knowledge is representing intention to revisit destination, [19] also confirmed that positive digital tourism systems' experience affects smart mobility emotional attachment through use satisfaction and user familiarity. This finding implies that positive attitude is not only affected by cognitive understanding, but also by perceived technological trust and cultural sympathy.

Therefore, enhancing the level of knowledge for tourists through education, social media campaigns and eWOM sharing via interactive digital platforms and smart phone applications, like was evidenced in the paraphrased work, can be an essential driver to encourage positive attitudes towards sustainable and innovative tourism practices [17], [18]. These initiatives entails evolution in social responses toward behavioral changes and sustained interaction to technology inspired tourism ecosystems.

Research Gap and Conceptual Framework

Existing literature has significantly tourist awareness, social media influence and attitudinal behavior. But a research gap still exists in synthesizing these constructs into one empirical model, which reflects the joint effect

of awareness, knowledge and attitude on preferences via digital platforms. While [17] and [12] treated these parameters separately, [17] highlighted the multidimensional context in which awareness-driven decision behavior can take place in the case of innovations like eBECA in smart tourism.

Additionally, the majority of existing research have concentrated on general tourism experiences rather than technology platforms in a particular context. The research by [18] call for empirical models to study the diffusion of innovations in sustainable mobility and tourism resilience. This void emphasizes the need for conceptual integration to understand how digital vs. social vs. attitudinal dimensions interrelate in technology-enabled tourism systems.

In addition, demographic moderators of awareness and preference formation such as age, tech savviness and travel motivation are commonly not included in current models. [19] suggest user experience and digital preparedness as moderator variable for model refinement in order to predict acceptance of smart tourism technologies.

Therefore, the present study suggested an integrated approach encompassing digital consciousness, social media power as well as attitudinal factors in understanding tourist preferences. The framework, which is built upon tourism behavior theory and innovation diffusion [17], [18] fills the theoretical gap identified and provides sustainable growth solutions that can be driven through the technology.

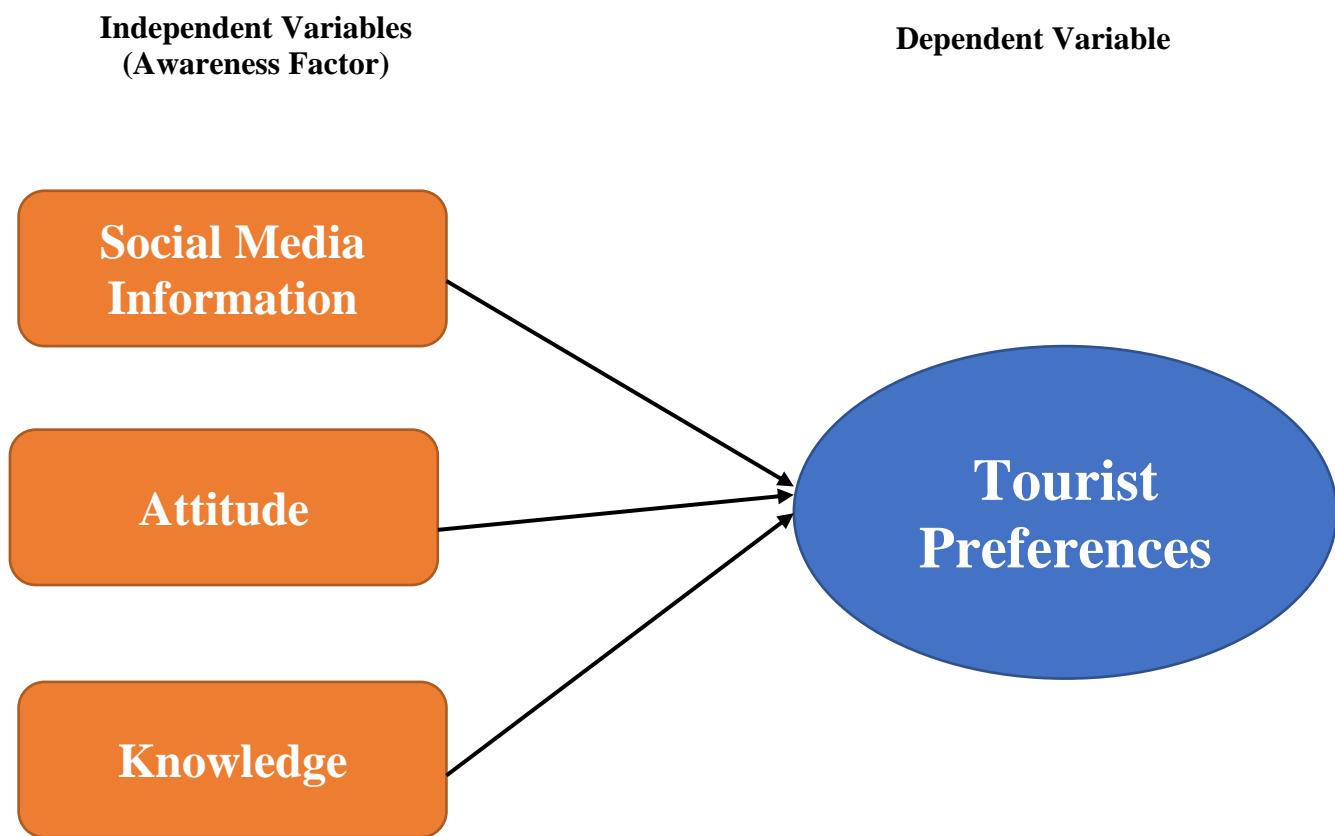


Figure 1: Research Model

METHODOLOGY

The present study has a quantitative design by looking at the close association between social media informational, awareness factor (knowledge and attitude) and their preference towards eBECA electric trishaw service provided for sustainable and innovative urban tourism. A quantitative approach is appropriate, as it is possible to apply statistical testing of measurable relationships between variables and generalizations. Method The study uses the survey method, often used in tourism research to gather standardized information from a large number of respondents [21]. This strategy can benefit from the objective, comparative measurement of how digitally provided information and knowledge influences tourists' preference for eBECA services.

For this research, purposive sampling is used, focusing on informants with prior travel experience and knowledge of a smart or digital tourism system such as eBECA. Purposive sampling is useful when data are desired from persons with similar experiences that can support judgement on a specific tourism product or innovation [22]. This study develop a structured questionnaire constructed from an existing measurement of social media influence, knowledge, attitude and tourist preferences. It has also been deduced that the instrument can be extended to incorporate further questions relating to knowledge and perceptions on eBECA's digital components, environmental values, and convenience [19].

The data obtained are subjected to descriptive and inferential statistics using SPSS. Demographic information is summarized by use of descriptive statistics, with regression analysis to explore factors that predict touristic preference for eBECA from social media information and awareness variables. Reliability test is conducted by Cronbach alpha with which the higher than 0.70 coefficient means that it has an acceptable internal consistency [2]. Finally, a factor analysis is employed to validate the measurement items. It is analytically guaranteed to ensure that the questionnaire effectively reflects the theoretical model of the relationship between awareness level, social media influence and eBECA preference [26]. These steps are congruent with best practice in quantitative tourism studies, and enhance the consistency of results.

Ethical considerations are observed throughout the research process. Respondents are informed about the study's objectives, and their participation is voluntary. All data are treated as confidential and used only for academic purposes. The study follows ethical standards by ensuring anonymity and data protection, consistent with academic research ethics [17]. By applying a severe methodological approach with validated instruments, appropriate sampling, and statistical testing, this study provides reliable and meaningful insights into how digital awareness and social media information shape tourist preferences for eBECA and similar sustainable tourism innovations.

FINDINGS

Demographic Profile of Respondents

Figure 2 illustrates the gender distribution of the respondents who participated in the study. Out of a total of 212 participants, 56.6% were female, while 43.4% were male. This indicates that there were slightly more female respondents compared to males. The higher percentage of female participants suggests that women are more engaged and willing to share their opinions regarding sustainable tourism innovations such as eBECA. This pattern may also reflect the growing participation of female travelers in tourism activities and their increasing awareness of sustainable mobility options. Overall, the results highlight a balanced yet slightly female-dominant representation among the respondents.

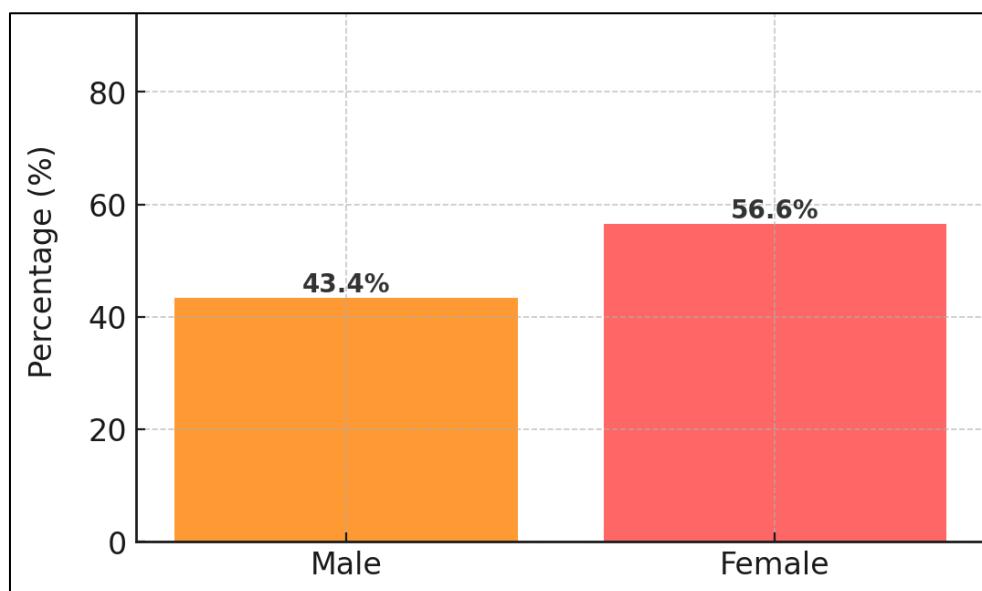


Figure 2: Respondents by Gender

Figure 3 presents the age distribution of the respondents. The respondents aged 18-25 years were the largest group of attendees (59.4%). The second largest group were between 26 and 33 years of age with 18.4 % before the number dropped below 18 years to 9 %. Lower percentages were observed in respondents aged 34 to 41 (5.7%), respondents between the aged of 42 through 49 (3.3%), and those 50 years old or more (4.2%). These results reflect the demographic characteristics of young adult which are typically more familiar with technology and computer, and would be easily to adopt digital platform such as eBECA. These users are biggest group for new tourism technologies and online travel applications.

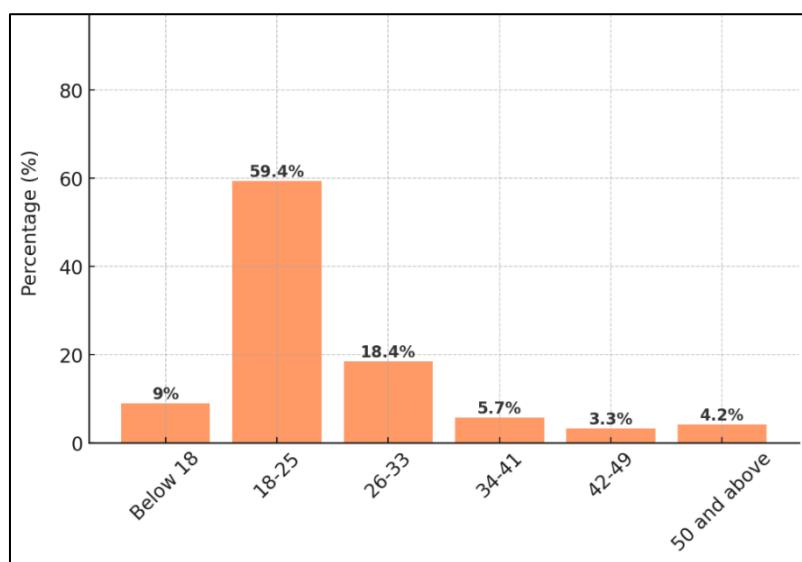


Figure 3: Respondents by Age Group

Figure 4 shows the racial composition of the respondents in this study. Most respondents were Malay (89.2%). Other ethnicities were second with 7.1%, then Chinese respondents at 2.8% and Indian respondents at 0.9%. Most of the respondents were Malay which is consistent with the majority population in Malaysia, as revealed by accompanying data. Although in smaller numbers, involving participants from other ethnicities will add diversity to the sample and enrich knowledge about tourists' perspective toward eBECA, and sustainable tourism mobility across different communities.

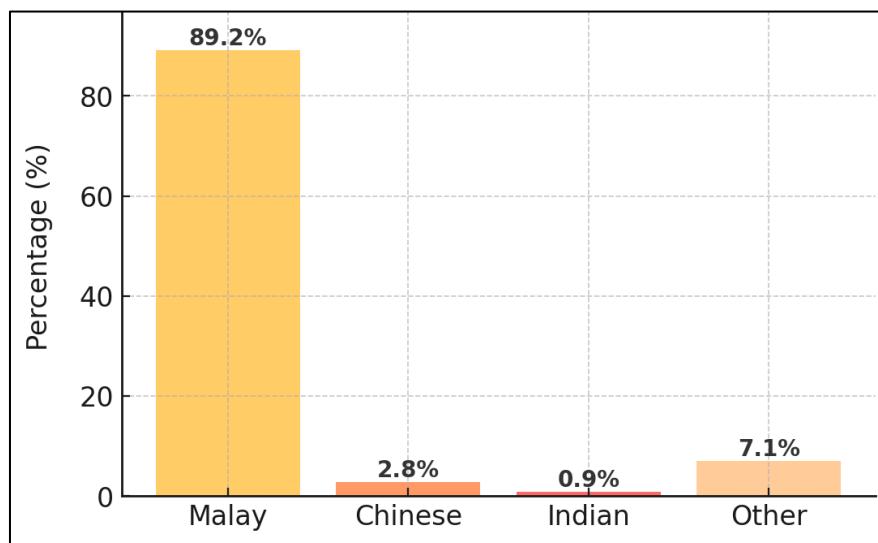


Figure 4: Respondents by Race

Figure 5 highlights the employment status of the respondents. Most participants were employed (37.7%), followed by students (30.7%), self-employed people (17%); unemployed ones made up 9.9% and retired

individuals 4.7%. These findings indicate that a majority of the participants were working professionals or students, who generally have more access and exposure to technology and digital services. It also indicates that the eBECA platform targets people who are employed or attending an institution of higher education, because work and schools require fast means of transport as a way for travel (daily purposes and tourism).

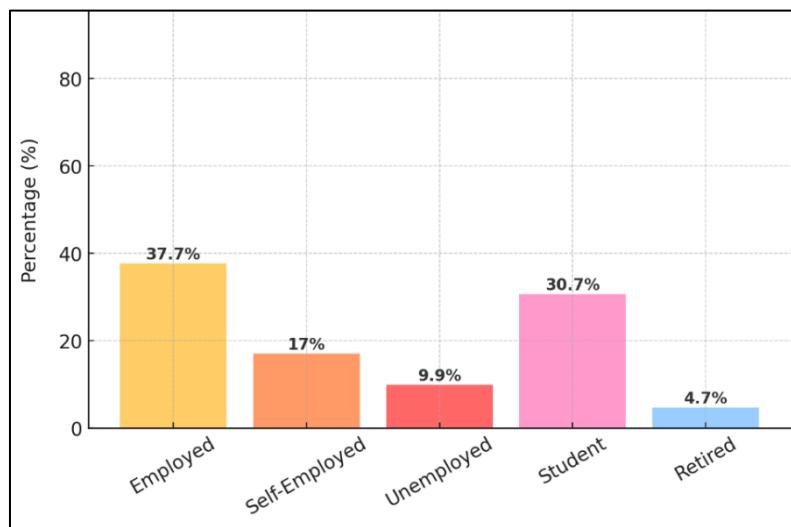


Figure 5: Respondents by Employment Status

Figure 6 displays the distribution of respondents according to their residential states. 23.6% (n = 232), followed by Perak with 14.2% (n = 140) and Kelantan at 11.8% of the total number in the sample. Other major contributors were Pahang (9.9%), Johor (9 %), Kuala Lumpur (9%) and Sarawak (9%). Slightly lower percentages were recorded for Kedah (6.1%), Sabah (3.8%) and Penang (3.3%), Negeri Sembilan (1.9%) and Labuan (0.9%). The results also show that the majority of respondents are from urban and semi-urban states where exposure to digital tourism innovations like eBECA is presumably higher. This analysis at the regional level plays a role in enriching an understanding of awareness and usage for tourism technology across different regions within Malaysia.

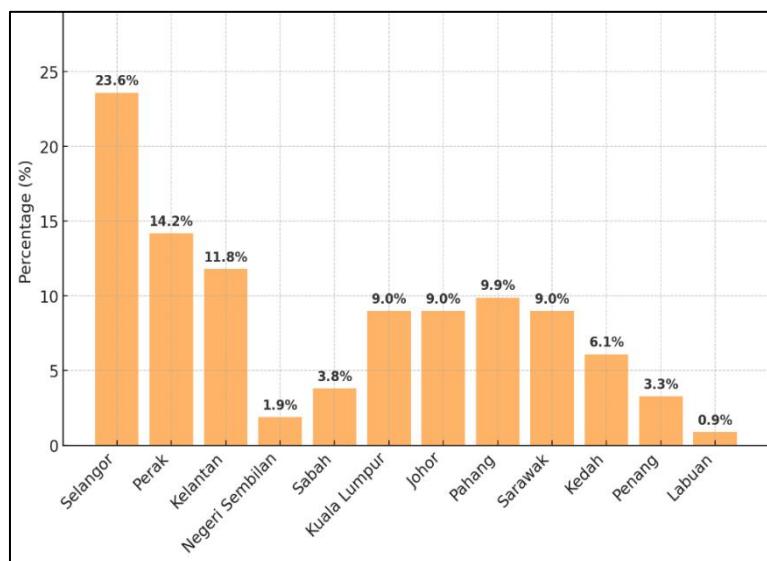


Figure 6: Respondents by Residential State

Correlation Coefficients

Table 1 shows the correlation matrices of the main variables (tourist preference [DV1], social media information [IV1], IV2 attitude factor, and IV3 knowledge factor). The findings reveal at significant level 0.01 that each of the variables are found to have positive and strong association with all other variables. The correlation

coefficient (r) between tourist preference and variables related to social media information is 0.906, which indicates a high degree of correlation; there's a very strong correlation and higher values indicating higher exposure with stronger preferences by tourists.

These are consistent with those travel intention is also significantly correlated with attitude factor ($r = 0.896$) and knowledge factor ($r = 0.902$), meaning that positive attitude and high level of knowledge strongly shape the preference of the tourists. The inter-correlation between independent variable was observed to be higher between the SM knowledge and info factor ($r = 0.917$), closely followed by relation between attitude and knowledge ($r = 0.925$).

These results suggest that tourists' knowledge and attitude are interrelated, and to a large extent they are amplified through social media involvement, which collectively influences their choices of travel destinations. In general, the high correlation patterns observed for all constructs indicate that the relationship of social media gathered information with regard to awareness variables (attitude and knowledge) ratio and tourist preferences are strong and positive which suggests a consistent relationship between these constructs in the eBECA tourism context.

Table 1: Correlations Coefficients

		DV1	IV1	IV2	IV3
DV1	Pearson Correlation	1	.906**	.896**	.902**
	Sig. (2-tailed)		.000	.000	.000
	N	213	213	213	213
IV1	Pearson Correlation	.906**	1	.898**	.917**
	Sig. (2-tailed)	.000		.000	.000
	N	213	213	213	213
IV2	Pearson Correlation	.896**	.898**	1	.925**
	Sig. (2-tailed)	.000	.000		.000
	N	213	213	213	213
IV3	Pearson Correlation	.902**	.917**	.925**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	213	213	213	213

Notes:

**. Correlation is significant at the 0.01 level (2-tailed).

DV1: tourist preference

IV1: social media information

IV2: Attitude factor

IV3: Knowledge factor

Multiple Linear Regression

Table 2 presents the model summary for the regression analysis conducted to examine the relationship between social media information, attitude factor, and knowledge factor as predictors of tourist preference. The analysis shows that the model produced a correlation coefficient ($R = 0.929$), indicating a very strong positive relationship between the independent variables and the dependent variable. The R Square value of 0.864 reveals that

approximately 86.4% of the variance in tourist preference can be explained by the combination of social media information, attitude, and knowledge factors.

This suggests that these three predictors have a substantial influence on tourists' preferences in the context of eBECA. The Adjusted R Square value of 0.862 further confirms that the model is stable and reliable, with minimal loss of explanatory power after accounting for sample size and the number of predictors. The Standard Error of the Estimate (1.06762) indicates a relatively small deviation between the predicted and actual values, suggesting that the regression model fits the data well. Overall, the results demonstrate that social media information, attitude, and knowledge collectively provide a strong and consistent prediction of tourist preference.

Table 2: Model Summary of Regression Analysis

Model R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.929 ^a	.864	.862

a. Predictors: (Constant), social media information, attitude factor, knowledge factor

b. Dependent Variable: tourist preference

DISCUSSION AND RECOMMENDATIONS

The core of the tourism industry that links residences, travel destinations, facilities, and sites of interest during the trip is the current state of understanding regarding tourist transportation. According to [4], there is an inherent connection between tourism and transportation. This is due to the fact that travelers require transportation to get from their place of origin to their destination. Thus, overall tourism satisfaction is determined by the mode of transportation used. It is true that the expansion of the transport industry affects tourism.

Transport needs to be provided in order for Melaka's tourism business to grow. It undoubtedly has a big impact on the expansion of the tourism sector, as [23] noted that a sophisticated policy approach has been implemented to identify the quality of transport services in rural areas with the plan to move to "more sustainable" modes of transport. The majority of informants, however, recommended increasing the number of city E rickshaws and expanding their hours of operation.

The outcome of comfort, safety, and efficiency are psychological aspects that impact how well a person experiences and enjoys their own travels. As stated by [4]. Travelers consider transportation to be a major consideration in most cases, which indicates a strong correlation between the expansion of the tourism sector and the effectiveness of the transportation sector. This argument was also made in earlier tourism-related research. It illustrates how attitudes towards things like the idea that transport is the primary link for visitors affect how transport and tourism are related. Tourist preference criteria such speed, load, comfort, cost, and safety are taken into consideration when making selections [13].

CONCLUSION

The research reveals that the current state of awareness among tourists is influenced by social media information, attitude factor, and knowledge factor. The study suggests that enhancing awareness and technology can help improve the overall tourism experience. The study reveals that age significantly influences users' perceptions of e-rickshaws in Malaysia, particularly in Melaka. It also suggests that social media information assimilation is influenced by attitude and knowledge characteristics, suggesting that policies aimed at social media can be effective in increasing e-rickshaw usage and awareness. The study also challenges the notion that perceived risk negatively impacts users' views on e-rickshaws, highlighting the need for a more nuanced understanding of how perceptions influence uptake decisions

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