

Research Article

Users' Perception of Vehicles Assembled in Cambodia and Driving Factors for Preferences

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Abstract

The Cambodian automotive sector is experiencing significant growth. It is observed that its expanding economy as a middle-class country with government support has pushed growing demands for brand-new vehicles. This signal indicates the shifts in preferences from imported cars to Cambodian-assembled vehicles. This also reflects users' perception of vehicles assembled in Cambodia and driving factors for preferences. Thus, the study seeks to (1) explore knowledge, attitude, and practice (KAP) of car users in Cambodia, (2) determine the correlation between KAP, and (3) identify factors influencing car preferences. With a purposive-sampling method, 204 responses were collected by using an online survey within a predetermined one-month period from 26 December 2024 to 25 January 2025 in compliance with the study requirements. The findings showed that only 10% of respondents agreed that most users prefer Cambodian-assembled vehicles over imported vehicles. Moreover, the knowledge, attitude, practice, and KAP of users in Cambodia on Cambodian-assembled vehicles are rated at a moderate level based on the class intervals of average scores. All variables in the knowledge, attitude, and practice are positive linear relationship. Furthermore, between the knowledge and attitude, between the knowledge and practice, and between the attitude and practice are positively correlated. The knowledge and attitude are meaningful for the practice, but they have little power on the practice because there are other factors not included in this model influencing the preferences of users. According to several sources, there are eight driving factors for users' preferences, such as brand reputation and trust, perception of quality, price and value, awareness and promotion, models and features, status symbol, after-sales services, long-standing supply chain, and networks. The findings offer actionable insights for policymakers and local manufacturers to promote Cambodian-assembled vehicles and enhance their competitiveness. This study suggests that the Royal Government of Cambodia should support and promote Cambodian-assembled vehicles more actively. At the same time, the local manufacturers should make more improvements, especially after-sales services for Cambodian-assembled vehicles. Then, Cambodian-assembled vehicles will have the potential to compete with imported cars from various countries.

Keywords

User' Perception, KAP, Cambodian-assembled Vehicles, Factors for Preferences, Automotive Sector

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1. Introduction

The global automotive market shows a positive growth trend. For instance, the global car demand increased significantly in 2024, as global car sales rose by approximately 4%, reaching around 78 million units, compared with about 75 million units in 2023 [1]. The individuals and families remained the primary car users worldwide in 2024, with the global passenger car sales reaching approximately 75 million units, representing an increase of about 3% compared 73 million units in 2023 [2]. The automotive sector is a vital driver of global economic growth, employing over 50 million people worldwide [3] and contributing approximately 3% of the world's gross domestic product (GDP), equivalent to USD 3 trillion in 2022 [4].

Regarding the ASEAN automotive market, a special ASEAN Investment Report (2023) highlighted a surge in foreign direct investment (FDI) across the region. For example, FDI inflows reached a record USD 224 billion in 2022. A substantial share of this investment was directed toward the development of electric vehicle (EV) supply chains, including battery manufacturing and automotive components. These investments were led by multinational companies that have deepened their presence in ASEAN to enhance supply chain resilience and gain access to emerging markets. The report further elaborated on ASEAN's transition from a commodity and labour-intensive economy toward a more advanced industrial ecosystem, including automotive assembly and component production. This transformation has laid the foundation for increased localization of vehicles and automotive parts within the region [5].

At the same time, in Cambodia, demand for personal transportation increased alongside economic expansion and the growth of the middle class [6]. By 2023, Cambodia had over 1 million cars on the road, including approximately 0.74 million light cars [7]. According to the Observatory of Economic Complexity (OEC) [8], most of the cars in Cambodia are imported from countries such as the United States, Thailand, China, Indonesia, and Japan.

However, in 2024, vehicle imports into Cambodia were observed to decline [9], coinciding with the presence of six automotive assembly companies in the country: DAEHAN Auto, RMA Automotive (Cambodia), CAMKO Motor, HGB Motors Assembly, GTV Motor, and TOYOTA TSUSHO Manufacturing (Cambodia) [10]. According to the General Department of Customs and Excise (GDCE) [11], the total value of imported vehicles during the first four months of 2024 amounted to USD 496 million, representing a decrease of approximately 13% compared to USD 568 million during the same period in 2023. This trend suggests that economic expansion, a growing middle class, and government support have stimulated demand for new vehicles. These signals indicate a gradual shift in the automotive market from imported vehicles toward Cambodian-assembled vehicles in response to

rising demand. Specifically, this study addressed the following two research questions:

- 1 How do users perceive vehicles assembled in Cambodia?
- 2 What factors influence users' preferences for vehicles assembled in Cambodia?

Therefore, the study seeks to (1) explore a comprehensive understanding of knowledge, attitude, and practice (KAP) of car users in Cambodia, (2) determine the correlation between KAP, and (3) identify factors influencing car preferences.

The paper makes two contributions: Theoretically, it contributes to an understanding of the KAP model. It makes a case for explaining how knowledge and attitudes toward local cars elaborate into actual practices. Empirically, it reveals how knowledge, attitude, and practice of car users in Cambodia are measured, and how they are analysing the relevant relation between them. The class interval of average scores is used. There is a moderate level of knowledge, attitude, practice, and KAP on Cambodian-assembled vehicles. By using a correlation matrix, a Pearson correlation analysis, and a multiple linear regression, there is a statistically significant positive correlation between KAP. Furthermore, the knowledge and attitude are meaningful for the practice, but they have little power on the practice because there are other factors not included in this model influencing the preferences of users.

The remainder of the paper is structured as follows: Section 2 reveals literature reviews, including conceptual and theoretical frameworks, relevant studies in general contexts, relevant studies in the research context, and the research gap. After describing the sample and methodology for data collection and analysis in Section 3, Section 4 shows findings from two parts, focusing on exploring the knowledge, attitude, and practice of car users in Cambodia in Part 1 and analysing the correlation between KAP by using a correlation matrix, a Pearson correlation analysis, and a multiple linear regression in Part 2. It shows identifying factors influencing car preferences. Moreover, Section 5 discusses results, mentioning several sources that are linked to Section 2. Last but not least, Section 6 summarises and concludes.

2. Literature Reviews

2.1. Knowledge-Attitude-Practice Concept

The Knowledge-Attitude-Practice (KAP) model is a theory that demonstrates an important relationship among knowledge, attitude, and practice [12, 13]. The purpose of the original KAP model is to show knowledge (what is known), attitude (what is believed), and practice (what is done) in the context of the topic of interest [14, 15]. In general, the study on people's behaviour always uses the KAP model [16]. It explores the key role of knowledge and attitude in behavioural decision-making. It is applied in various fields [17]. It is also employed as a popular survey instrument in the field of social

research [13]. It is a useful descriptive framework for a comprehensive understanding of consumer perceptions of automobiles [18].

Several sources define knowledge. It is the recall of facts, information, and skills gained through practice or education [19]. It means the ability to understand and use information through education, learning experience, and identifying the label [20]. Knowledge is the basis for behavioural change [21]. It shows the level of awareness and information users hold about a product [18]. In simple terms, knowledge is a fact [22]. It is the understanding of the information, which is the conscious and non-symbolic perception of meaning [23]. It refers to cognitive elements associated with mental actions such as perception, memory, learning, and prediction during the processing of information [24].

Referring to the definition of attitudes, it is the feelings or opinions of community residents on a label in some situations, including credibility, helpfulness, and necessity [20]. For another explanation, attitudes are the forces behind behaviour change [21]. It focuses on their positive or negative evaluations [18]. Moreover, attitude refers to a positive or negative evaluation of an objective [25]. In general, attitudes are affective responses to an object, which depend on beliefs, values [26], personal experiences, encounters with others [27], the processes of socialisation, and direct or indirect contact with reality [28].

Last but not least, practice is the last dimension of the KAP model. It refers to the use or application of labels by community residents [20]. Furthermore, practice reflects their actual purchasing and usage behaviour [18]. For another explanation, practice focuses on regular activities that are influenced by widely shared social norms and beliefs [29]. Moreover, practices denote specific actions that are directly related to processes. These specific actions are cognitive (knowledge) and affective (attitudes) to the extent that all human acts are consistent with their values, beliefs, understanding, culture, and other socialisation processes [24, 30].

2.2. KAP in the Automotive Sector

Studies examining consumers' perception and influencing factors were done in a few countries in Europe. Hungary has a long-standing tradition in manufacturing vehicles. Its industry has begun to adjust and shift operations to produce electric vehicles (EVs) [31, 32]. The most important factors for fostering acceptance in the Netherlands are financial compensation, transparent communication, and reliable control of the system by the user [33]. In Germany, the total cost of EV ownership has influenced the adoption of battery EVs, that access to charging infrastructure and levels of awareness [34]. The vital factor affecting German users is basic vehicle safety, such as safe braking behaviour, visibility, and safety in all weather conditions [35].

Referring to Asian countries, for example, in China, brand image, encompassing functional, symbolic, and experiential

aspects, significantly positively influences Chinese purchase intention [36]. Furthermore, trust has a significant impact on Chinese attitudes [37]. In Japan, the recurrence of charging at the target location affects the charging decision of battery electric vehicle users. Moreover, there are significant relationships between socioeconomic characteristics and charging decisions [38, 39]. Another study in South Korea found that a reduction in purchase price can substantially boost alternative fuel vehicle sales. Additionally, attitudinal perceptions such as perceived environmental and economic benefits are significant factors for purchasing preferences [40].

For ASEAN countries, attitudes and subjective norms do not significantly influence battery electric vehicles adoption intentions in Indonesia [41], but there are significant effects of country image and brand image on purchase intentions [42]. In Vietnam, safety and environmental concerns, perceived usefulness and ease of use, and financial incentive policy are influential factors of intention to adopt electric vehicles, but knowledge did not affect the intention [43]. In Thailand, purchase intention is significantly and positively influenced by performance and effort expectancies, social influence, motivation, and environmental concern. But it is not significantly influenced by price value and policy measures [44]. In the Philippines, the perceived economic, environmental, and authority support concerns indicated the most significant factor indirectly affecting behavioural intention to purchase hybrid cars [45].

2.3. Vehicle Purchasing in Cambodia

In Cambodia, used vehicles and new imported cars have dominated the Cambodian automotive sector. Several factors that have affected Cambodian users' preferences are brand reputation and trust, perception of quality, price and value, awareness and promotion, wider selection of models and features, status symbol, after-sales service, long-standing supply chains and networks [46-49].

According to an investigation of preferences versus locally assembled vehicles in the Cambodian context, there is low user awareness. It is still a challenge for consideration. Both structural incentives and heightened public visibility of new vehicle options regarding awareness campaigns, stakeholder engagement, and sensory access to models are mainly required for successful transitions. For instance, there are test drives and exhibitions. In fact, awareness is a vital driver in the KAP model because when users lack familiarity with locally assembled vehicles, including origin, parts quality, and value, they are less likely to develop favourable attitudes or consider adoption as a valid practice [50].

The most relevant recent studies show that consumer preference for electric vehicles (EVs) increases substantially when EV prices are comparable to internal combustion engine vehicles, underscoring the importance of purchase subsidies [51]. Additionally, affordability, charging access, battery-related

concerns, and cultural scepticism are challenges for Cambodian users. Moreover, infrastructural concerns, particularly limited charging infrastructure and electricity supply reliability, are the most frequently cited barriers in Cambodia [52].

2.4. Research Gap in Cambodia

After literature reviews, a research gap is observed that is

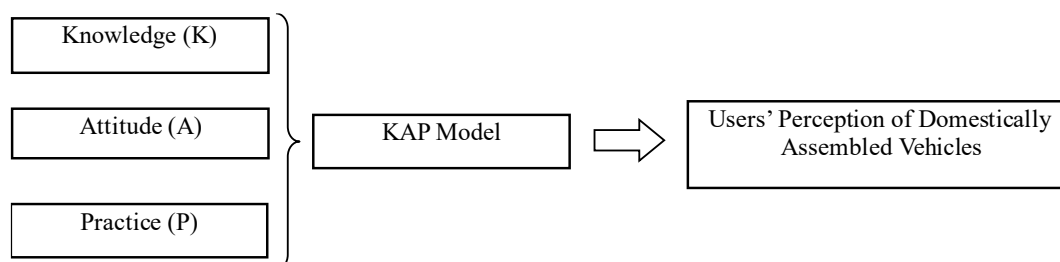


Figure 1. Flow of Conceptual Framework.

3. Materials and Methods

3.1. Research Design

This study was designed as quantitative research [53]. It was non-experimental research that employed descriptive research, including survey research by using a descriptive survey [54] and correlational research [55]. We conducted an online survey using Google Forms and a simple random sampling method. The online survey was a good choice for this research because the sample size was fairly large and widely distributed [56]. Likert scales with five scales (1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly agree) and single-response questions in a survey were established to fit the study. This research design was appropriate for the present study, which was carried out to identify knowledge, attitude, and practice of vehicle users in Cambodia, to determine the correlation between KAP, and to explore factors influencing car preferences.

3.2. Research Setting

This research was conducted in Cambodia because it focused on users' perception of vehicles assembled in Cambodia and driving factors for preferences.

3.3. Research Participants

There were four criteria for participants in our online survey. Our selection respected all these criteria below:

- 1) Participants living in Cambodia,
- 2) Participants are at least 18 years old,
- 3) Participants using a telegram channel, and

notable for the study on local car preferences in developing country contexts like Cambodia. The research gap shows a scarcity of studies on KAP that focused specifically on domestically assembled vehicles because the existing KAP and adoption studies focused on new technologies or on general purchase determinants.

- 4) Participants having the ability to access the Google Forms.

Several similar studies selected a sample size 200 or less than 200 for the survey such as the study on consumer buying behaviour of locally assembled private vehicles in Addis Ababa with sample size 200 customers [57], the study on challenge and opportunity of import substitution in local vehicle assembling with sample size 200 customers [58], the study on industrial practitioner's perception on the application of exoskeleton system in automotive assembly industries with sample size 52 respondents [59], the study on customers' behaviour towards local and imported compact cars with sample size 40 customers [60], etc. For this study, there were 204 responses from the online survey. All 204 responses were analysed for this study.

3.4. Research Instrument

This study used an online questionnaire administered through Google Forms to collect data from Cambodian participants. The questionnaire was written in both Khmer and English to ensure good understanding. It was designed by the researchers based on the research objectives of the study. It was open for responses for one month, from 26 December 2024 to 25 January 2025 in compliance with the study requirements. The questionnaire survey had twenty questions divided into five main parts: general information, knowledge, attitude, practice, and comments. We used single-response questions for general information, and Likert scales with the same five levels for other parts. The estimated time spent on this questionnaire was around ten minutes.

3.5. Data Collection

The study purpose, with an explanation and the link to the

questionnaire in the Google Forms survey, was sent to targeted Cambodian respondents in our Telegram group channels and individual Telegram channels. It was also shared by our networks through several Telegram channels as well as groups in order to reach more targeted Cambodian respondents.

3.6. Data Analysis and Interpretation

After finishing an online survey, the collected data was exported from Google Forms into Microsoft Excel. The data were reviewed and cleaned up before data analysis. Referring to the availability of data, it is possible to retrieve from the provided link: <https://11nk.dev/Ta4nc>. Moreover, Cronbach's Alpha was also checked by using the R program with version 4.4.1. As a result, Cronbach's Alpha for all items in knowledge, attitude, and practice was 0.7, 0.8, and 0.6, respectively, see Tables 1, 2, and 3. The knowledge and attitude scales demonstrated acceptable internal consistency. But the practice scale showed lower reliability. This was noted as a limitation, and the relevant results in practice may not reflect a reasonable outcome. While the value is acceptable for exploratory research, it indicates moderate internal consistency and should be interpreted with caution. Microsoft Excel was employed to prepare all tables in the study. The R program with version 4.4.1 and the RStudio with version 4.2.0 were used for simple and advanced statistical analysis, such as finding Cronbach's Alpha of items in knowledge, attitude, and practice; summarizing demographic information; creating all figures; finding a correlation matrix; analysing Pearson correlation by using "corr_test" from the psych package in R program; and finding multiple linear regression. Descriptive statistics, a Likert scale with five scales, a correlation matrix, Pearson correlation analysis, and a multiple linear regression were performed to answer the research objectives in the study. The detailed roles of each statistical tool were mentioned as follows:

- 1) Descriptive statistics had a role to elaborate demographic information such as gender, age, education, job, and location of respondents by focusing on frequency and percentage.
- 2) A Likert scale with five-point scales had a role to measure the level of responses for each item in knowledge, attitude, and practice. Moreover, the class interval of average scores with a 5-point scale was also employed to explore the level of knowledge, attitude, practice, and KAP of respondents in the study.
- 3) Correlation matrix had a role to illustrate the level of correlation for all variables in knowledge, attitude, practice, and KAP on Cambodian assembled vehicles.
- 4) Pearson correlation analysis by using "corr_test" from the psych package in the R program with version 4.4.1 had a role in indicating the level of statistically significant correlation between knowledge, attitude, and practice.

- 5) Multiple linear regression had a role in explaining how knowledge scores and attitude scores predict practice scores.

Table 1. Cronbach's Alpha of Items in Knowledge.

Items in Knowledge	Cronbach's Alpha (α)
K1 = Aware of the types and brands of vehicles assembled in Cambodia	$\alpha = 0.7$
K2 = Believe Cambodian-assembled vehicles meet international standards	
K3 = Have sufficient information about the benefits of purchasing Cambodian-assembled vehicles	
K4 = Most users prefer Cambodian-assembled vehicles over imported vehicles	
K5 = Believe Cambodian-assembled vehicles have the potential to compete with imported brands	

Table 2. Cronbach's Alpha of Items in Attitude.

Items in Attitude	Cronbach's Alpha (α)
A1 = Trust the quality of Cambodian-assembled vehicles rather than imported cars	$\alpha = 0.8$
A2 = Feel proud to own a Cambodian-assembled vehicle	
A3 = Willing to recommend Cambodian-assembled vehicles to others	

Table 3. Cronbach's Alpha of Items in Practice.

Items in Practice	Cronbach's Alpha (α)
P1 = Consider Cambodian-assembled vehicles when purchasing a new vehicle	$\alpha = 0.6$
P2 = Prioritize affordability over brand reputation when choosing a vehicle	
P3 = Have attended promotional events or exhibitions for Cambodian-assembled vehicles	

3.7. Ethical Considerations

The ethical standards were respected in all research processes in this study. The permission from each admin of our Telegram group channels was obtained before dropping the

objective explanation and the link to the questionnaire to Telegram group members. For individual Telegram channels, the purpose was explained with the attached link to the questionnaire. The identification of the participants was kept confidential. The participation in the study was entirely voluntary.

4. Results

For basic information of 204 respondents, most of them were male, having an age between 35 and 50 years old. Most of them got bachelor's and master's degrees, and they were government officers and private sector employees. Most of them lived in urban areas in Cambodia. Table 4 shows the basic information of the participants.

Table 4. Demographic Information.

Respondents	Frequency (N = 204)	Percentage (%)
Gender		
- Male	142	70
- Female	62	30
Age		
- 18-24	20	10
- 25-34	60	29
- 35-50	121	59
- > 50	3	2
Education		
- High school	5	2
- Bachelor	91	45
- Master	104	51
- Ph.D.	4	2
Job		
- Consultant/self-employee	21	10
- Teacher/researcher	4	2
- Government employee	76	37
- Private-sector employee	87	43
- Business owner	12	6
- Housewife	2	1
- Other	2	1
Location		
- Rural	7	3

Respondents	Frequency (N = 204)	Percentage (%)
- Suburban	34	17
- Urban	163	80

4.1. Knowledge, Attitude, and Practice

Based on the results of the knowledge, 55% of respondents are aware of the types and brands of vehicles assembled in Cambodia, and they believe Cambodian-assembled vehicles have the potential to compete with imported car brands because they believe Cambodian-assembled vehicles meet international standards. However, only 10% of respondents agreed and strongly agreed that most users prefer Cambodian-assembled vehicles over imported cars because they have sufficient information about the benefits of purchasing Cambodian-assembled vehicles. Figure 2 shows a detailed result of items in knowledge.

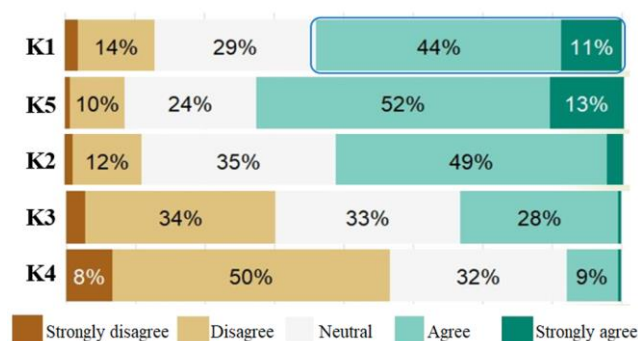


Figure 2. Result of 5 Items in Knowledge.

Note:

- 1) K1 = Aware of the types and brands of vehicles assembled in Cambodia
- 2) K2 = Believe Cambodian-assembled vehicles meet international standards
- 3) K3 = Have sufficient information about the benefits of purchasing Cambodian-assembled vehicles
- 4) K4 = Most users prefer Cambodian-assembled vehicles over imported vehicles
- 5) K5 = Believe Cambodian-assembled vehicles have the potential to compete with imported brands

For the result finding for attitude, 54% of respondents feel proud to own a Cambodian-assembled vehicle, and they are willing to recommend it to others. But around 20% of respondents trust the quality of Cambodian-assembled vehicles rather than imported cars. Figure 3 presents a detailed result of items in attitude.

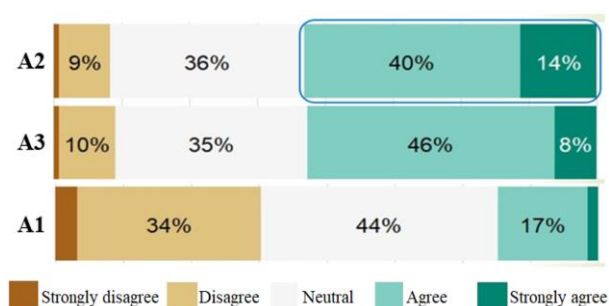


Figure 3. Result of 3 Items in Attitude.

Note:

- 1) A1 = Trust the quality of Cambodian-assembled vehicles rather than imported cars
- 2) A2 = Feel proud to own a Cambodian-assembled vehicle
- 3) A3 = Willing to recommend Cambodian-assembled vehicles to others

According to the results of the practice, 42% of respondents consider Cambodian-assembled vehicles when purchasing a new car. 47% of respondents prioritize affordability over brand reputation when choosing a car. Around 30% of respondents have attended promotional events or exhibitions for Cambodian-assembled vehicles. Figure 4 presents a detailed result of items in practice.

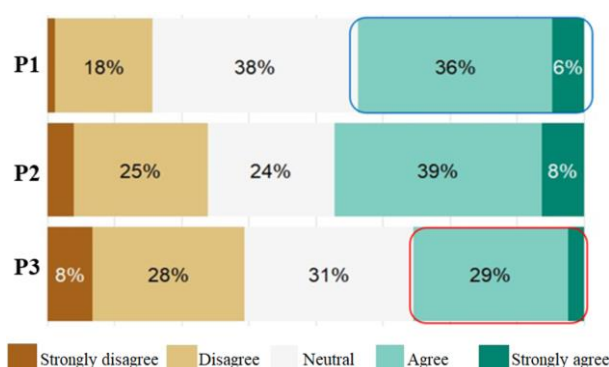


Figure 4. Result of 3 Items in Practice.

Note:

- 1) P1 = Consider Cambodian-assembled vehicles when purchasing a new vehicle

2) P2 = Prioritize affordability over brand reputation when choosing a vehicle

3) P3 = Have attended promotional events or exhibitions for Cambodian assembled vehicles

For describing and interpreting Likert scale scores, the class interval was calculated by using the average method. First, we calculated the minimum and maximum possible sums. We had 11 items in KAP on a 5-point scale. The minimum sum was $1 \times 11 = 11$, and the maximum sum was $5 \times 11 = 55$. Second, we found the range of possible averages by dividing the minimum and maximum sums by the number of items. So, the minimum average would be $11 / 11 = 1$, and the maximum average would be $55 / 11 = 5$. Third, we divided the range of possible scores by the number of scale categories (which was 5 in this case). The width would be $(5 - 1) / 5 = 0.8$. Finally, we started with the minimum composite score and added the width to it to get the lower limit of the first interval. Then, we continued adding the width to the lower limit of each subsequent interval to define the upper and lower limits of each category.

By using the same method for 5 items in knowledge, 3 items in attitude, and 3 items in practice, we received the same class interval for describing and interpreting Likert scale scores. The table of a 5-point scale interval showed the class intervals of average scores.

Table 5. A 5-Point Scale of Class Intervals.

Interval	Midpoint	Interpretation
1.00 - (1.00 + 0.80)	1.40	Very low level
1.81 - (1.80 + 0.80)	2.20	Low level
2.61 - (2.60 + 0.80)	3.00	Moderate level
3.41 - (3.40 + 0.80)	3.80	High level
4.21 - (4.20 + 0.80)	4.60	Very high level

By using a class interval of average scores, there is a moderate level of knowledge, attitude, practice, and KAP on Cambodian-assembled vehicles because the Cambodian automotive industry is still in its early stages, with six automotive assembly industries by 2024.

Table 6. Average Scores of KAP and Interpretation.

	Knowledge (K)	Attitude (A)	Practice (P)	KAP
Average:	3.17	3.28	3.12	3.19
Interpretation:	Moderate level	Moderate level	Moderate level	Moderate level

4.2. Correlation Between KAP

For the correlation of 5 variables in knowledge on Cambodian-assembled vehicles, all variables show a positive correlation. The variable between K1 and K4, the variable between K1 and K5, the variable between K2 and K5, and the variable between K3 and K5 show a weak positive linear relationship. Moreover, the variable between K1 and K2, the variable between K2 and K3, the variable between K2 and K4, the variable between K3 and K4, and the variable between K4 and K5 have a moderate positive linear relationship. But the variable between K1 and K3 is a moderately strong positive linear relationship.

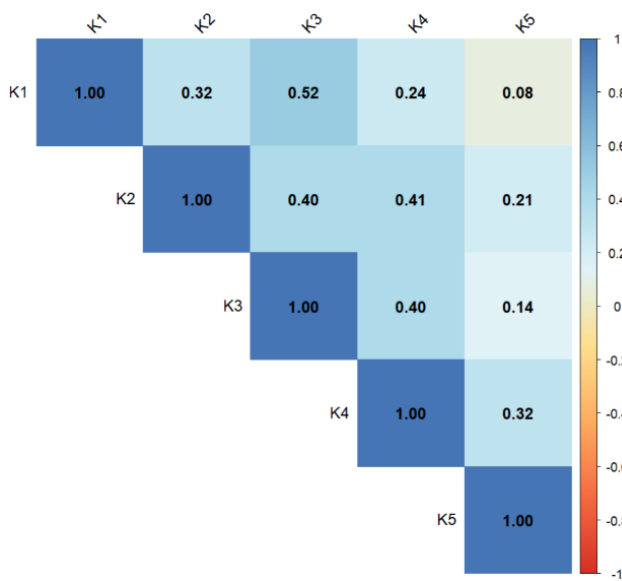


Figure 5. Correlation Matrix of 5 Variables in Knowledge.

Note:

- 1) K1 = Aware of the types and brands of vehicles assembled in Cambodia
- 2) K2 = Believe Cambodian-assembled vehicles meet international standards
- 3) K3 = Have sufficient information about the benefits of purchasing Cambodian-assembled vehicles
- 4) K4 = Most users prefer Cambodian-assembled vehicles over imported vehicles
- 5) K5 = Believe Cambodian-assembled vehicles have the potential to compete with imported brands

For the correlation of 3 variables in attitude on Cambodian-assembled vehicles, all variables show a positive correlation. The variable between A1 and A2 and the variable between A1 and A3 have a moderate positive linear relationship. But the variable between A2 and A3 is a moderately strong positive linear relationship.

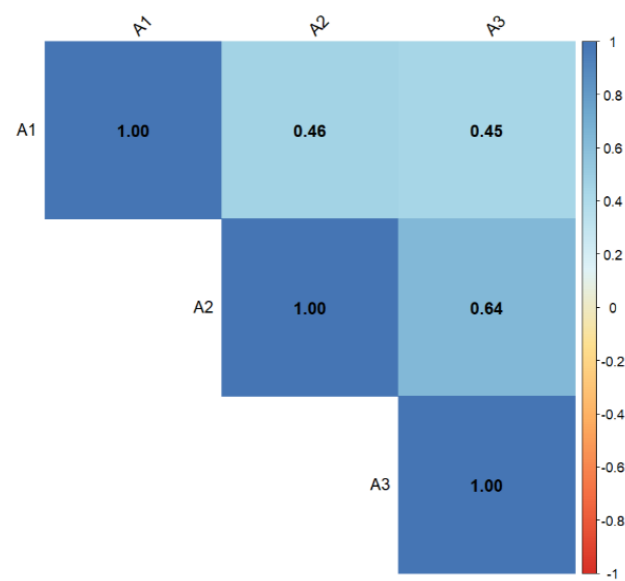


Figure 6. Correlation Matrix of 3 Variables in Attitude.

Note:

- 1) A1 = Trust the quality of Cambodian-assembled vehicles rather than imported cars
- 2) A2 = Feel proud to own a Cambodian-assembled vehicle
- 3) A3 = Willing to recommend Cambodian-assembled vehicles to others

For the correlation of 3 variables in practice on Cambodian-assembled vehicles, all variables show a positive correlation. The variable between P1 and P2 and the variable between P1 and P3 have a moderate positive linear relationship. But the variable between P2 and P3 is a weak positive linear relationship.

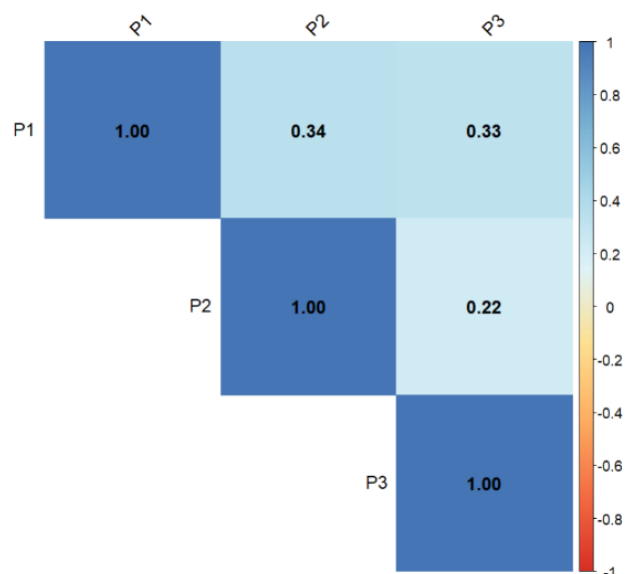


Figure 7. Correlation Matrix of 3 Variables in Practice.

Note:

- 1) P1 = Consider Cambodian-assembled vehicles when purchasing a new vehicle
- 2) P2 = Prioritize affordability over brand reputation when choosing a vehicle
- 3) P3 = Have attended promotional events or exhibitions for Cambodian assembled vehicles

For the correlation of knowledge, attitude, and practice on Cambodian-assembled vehicles, all variables show a positive correlation. The variable between knowledge (K) and attitude (A), the variable between K and practice (P), and the variable between A and P have a moderately strong positive linear relationship.

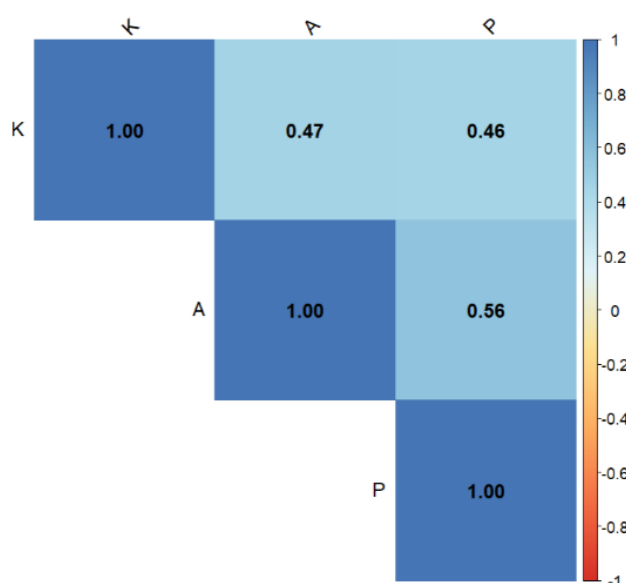


Figure 8. Correlation Matrix of 3 Variables in KAP.

According to the Pearson correlation analysis by using `corr_test` from the `psych` package in the R program, the variables K and A have a statistically significant moderate positive correlation, $r(202) = 0.470$, $p < 0.001$, 95% CI [0.355, 0.570]. The variable between K and P is a statistically significant moderate positive correlation, $r(202) = 0.459$, $p < 0.001$, 95% CI [0.344, 0.561]. The variable between A and P is a statistically significant, strong positive correlation, $r(202) = 0.563$, $p < 0.001$, 95% CI [0.462, 0.650].

Finally, a multiple linear regression was conducted to elaborate on how knowledge scores and attitude scores predict practice scores. After running multiple linear regression in the R program, it was found that the overall model was statistically significant: $F(2, 201) = 58.04$, $p < 0.001$, indicating that the combination of knowledge and attitude significantly predicts practice behaviour. The model revealed approximately 36.6% of the variance in practice (Adjusted $R^2 = 0.3598$), which suggested a moderate explanatory power. The fitted regression equation was:

$$\text{Practice} = 0.848 + 0.298 \times \text{Knowledge} + 0.427 \times \text{Attitude}$$

Where:

- 1) 0.848 is the intercept, the predicted practice score when both knowledge and attitude are zero.
- 2) 0.298 is the coefficient for knowledge: for every one unit increase in knowledge, the practice score increases by 0.298 units, holding attitude constant.
- 3) 0.427 is the coefficient for attitude: for every one unit increase in attitude, the practice score increases by 0.427 units, holding knowledge constant.

Both knowledge and attitude are statistically significant positive predictors of practice, with attitude having a slightly stronger effect. Even if the knowledge and attitude are meaningful for the practice, they have little power on the practice because there are other factors not included in this model influencing the preferences of users.

5. Discussion

The findings indicate that 55% of respondents were aware of the types and brands of vehicles assembled in Cambodia, while only 10% agreed or strongly agreed that most users prefer Cambodian-assembled vehicles over imported cars. Additionally, 54% of respondents reported feeling proud to own a Cambodian-assembled vehicle and expressed willingness to recommend it to others. However, only around 20% of respondents reported trusting the quality of Cambodian-assembled vehicles more than imported cars. Furthermore, 42% of respondents consider Cambodian-assembled vehicles when purchasing a new car, and 47% of respondents prioritize affordability over brand reputation when choosing a car. Overall, respondents demonstrated a moderate level of knowledge, attitude, practice, and KAP regarding Cambodian-assembled vehicles.

There were several reasons behind the above findings on users' perception of vehicles assembled in Cambodia and driving factors for preferences. The U.S. Department of Commerce, International Trade Administration [49] mentioned that imported cars are generally higher quality, durability, and advanced technology, especially from Japan, South Korea, the US, and Europe. Cambodian users trust well-known brands such as Toyota, Lexus, Honda, Ford, etc., because they have a global reputation as manufacturers, long-term product performance, customer word-of-mouth, historical market presence in Cambodia, perceived safety, and reliability. Although imported cars can be expensive, Cambodian users often prefer to pay more for them because of a better long-term investment. The resale value of imported cars is usually higher. Imported cars have well-established support in Cambodia, such as spare parts, skilled mechanics, and specialized garages. According to MyKhmerCar and Khmer Times [9, 47], imported used cars, especially Japanese second-hand, are recognized to be well-maintained and long-lasting. Cambodian users have a strong belief that "imported = better", even if the car is used. The reasons are because of quality control standards in origin countries, durability and longevity of parts, fit-and-finish in

interior/exterior, advanced safety and engine technology, and user experience with used imports still functioning well. MyKhmerCar [47] showed that car dealerships and importers often have good marketing for imported cars that are more visible to Cambodian users. Moreover, they have strong public relations with local manufacturers, strong government communication or campaigns, a wide branding presence in media or dealerships, user reviews or success stories, and wide consumer trust in familiar foreign brands. Based on Khmer Times and the U.S. Department of Commerce, International Trade Administration [9, 49], imported cars offer a huge variety of models, from luxury sedans to SUVs and hybrids, with various features and designs. For Reddit [48], owning an imported car is often seen as a status symbol in Cambodian society. Driving a Lexus, Land Cruiser, or a luxury European car is associated with success and social standing. Referring to Khmer Times and the Cambodia Automotive Industry Federation [9, 46], even though the Cambodian government may offer incentives for locally assembled vehicles, imported cars still dominate because of long-standing supply chains and networks. Importers benefit from economies of scale and strong relationships with foreign suppliers, which allow them to offer competitive pricing and quick delivery.

The findings also revealed that all variables in knowledge, attitude, practice, and KAP are positively correlated and have a positive linear relationship. Knowledge, attitude, and practice are statistically significantly positively correlated. The overall model is statistically significant. The combination of knowledge and attitude significantly predicts practice behaviour. Both knowledge and attitude are statistically significant positive predictors of practice, with attitude having a slightly stronger effect. This aligns with the study of Luo et al. [18], which mentioned that knowledge and attitude affect practice. Even if the findings explained that the knowledge and attitude are meaningful for the practice, they have little power on the practice because there are other factors not included in this model influencing the preferences of users. According to Balinado et al. [61], the knowledge and attitude alone are not always sufficient to influence consumer behaviour, specifically, in contexts where financial and infrastructural constraints exist.

6. Conclusions

This research was conducted to explore a comprehensive understanding of the knowledge, attitude, and practice of vehicle users in Cambodia, to determine the correlation between KAP, and to identify factors influencing car preferences through an online survey in Cambodia. This study has shown that only 10% of respondents agreed that most users prefer Cambodian-assembled vehicles over imported cars. One of the key findings is that the knowledge, attitude, practice, and KAP of Cambodian users on vehicles assembled in Cambodia are moderate level based on the class intervals of average scores. All variables in the knowledge, attitude, and practice

have a positive linear relationship. Moreover, between the knowledge and attitude, between the knowledge and practice, and between the attitude and practice are statistically significant positive correlation. The knowledge and attitude are meaningful for the practice, but they have low power on the practice because there are other factors not included in this model influencing the preferences of users. According to several sources, there are eight other driving factors for users' preferences, such as brand reputation and trust, perception of quality, price and value, awareness and promotion, models and features, status symbol, after-sales services, long-standing supply chain, and networks.

Practically, to have the potential to compete with imported cars from various countries, this study suggests that the Royal Government of Cambodia should have more proactive policies that support and promote Cambodian assembled vehicles. Its actions could be considered to provide targeted incentives such as tax reductions, lower import tariffs on raw materials and parts, and financial subsidies to encourage both local assembly and user adoption. Moreover, the government should establish public awareness campaigns to show the economic and social benefits of choosing locally assembled vehicles, such as job creation, reduced dependency on imports, and contribution to the national industry. These campaigns can also help shift user attitudes. Furthermore, to have a strong signal of support, boost user confidence, and normalize the use of locally produced automobiles, the government should create initiatives like preferential government procurement of local vehicles for official use. At the same time, this study also suggests that local manufacturers to improve and enhance product quality, safety features, and after-sales services to build credibility and trust among Cambodian users. Additionally, to address practical barriers that often discourage adoption, local manufacturers should consider other main points such as expanding dealer and service networks, offering flexible financing schemes, and ensuring the availability of spare parts.

Although this study contributes to an understanding of the knowledge, attitude, and practice of car users in Cambodia, the correlation between KAP and factors influencing car preferences has some limitations. First, the study is limited to a sample size. Another limitation is the lower reliability of the practice scale. Cronbach's Alpha for all items in practice is 0.6 ($\alpha = 0.6$). In addition, the study's limitation lies in the KAP model. It is not added the theory of planned behaviour (TPB). To address these limitations, future research should cover refinement and validation of the practice scale, use of mixed-methods or longitudinal designs to capture behavioural changes over time, and comparative studies between locally assembled and imported vehicles or across different developing countries.

Abbreviations

A	Attitude
ASEAN	Association of Southeast Asian Nations

EV	Electric Vehicle
FDI	Foreign Direct Investment
GDCE	General Department of Customs and Excise
GDP	Gross Domestic Product
K	Knowledge
KAP	Knowledge-Attitude-Practice
N	Number
OEC	Observatory of Economic Complexity
P	Practice
TPB	Theory of Planned Behaviour
U.S.	United States
USD	United States Dollar

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Author Contributions

Thy Hy: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Project administration, Resources, Visualization, Writing – original draft, Writing – review & editing

Lyhour Hin: Conceptualization, Formal Analysis, Methodology, Software, Supervision, Validation, Writing - review & editing

Sopheha Nhean: Conceptualization, Methodology, Supervision, Validation, Writing – review & editing

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Data Availability Statement

The data that support the findings of this study can be found at: <https://11nk.dev/Ta4nc>

Conflicts of Interest

The authors declare no conflicts of interest.

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Biography



Thy Hy is a Cambodian professional with over 20 years of expertise in development management, socio-economic research, and capacity-building initiatives. He holds two bachelors' degree (Development Economics and Management) from the Royal University of Law and Economics, Cambodia and a master's degree (Management) from the National University of Management, Cambodia. Currently, he is a Ph.D. candidate in Economics and Development Management at the Royal University of Agriculture, Cambodia. He has successfully led numerous high-impact projects aimed at strengthening skills development, fostering economic growth, and empowering communities. His career spans leadership roles, including his previous position as a Deputy CEO of the Skills Development Fund (SDF) and a Deputy CEO of the Innovative Services, Engineering, and Advisory (iSEA), where he spearheaded strategic planning, project oversight, and capacity-building programs. His current position is a Team Leader/National Project Coordination Specialist of SBK Research and Development.



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Sophea Nhean is a senior official of the Ministry of Agriculture Forestry and Fisheries (MAFF). Also, he is a researcher and lecture at Faculty of Agricultural Economic and Rural Development, Royal University of Agriculture (RUA), Cambodia. He is a horticulturalist and agronomist. He graduated Ph.D. degree in Agricultural Science from Khon Kaen University (KKU), Thailand in 2019. His research expertise and experience mainly focused on plant ecophysiology, cropping system, farming system (soil-plant- atmosphere interaction) related to agri-tech and innovation, environment, climate change adaptation, and agricultural value chain. In addition, he has more than 10 years of experience on extension and technologies transfer to farmers and communities. He has led and participated in many projects related to value chain, postharvest, crop production, and extension services. Moreover, he supervised bachelor, master, and Ph.D. students.



Bandith Seng is an accomplished environmental scientist and project management specialist with a Ph.D. from Okayama University, Japan. With over nine years of experience, he excels in policy research, monitoring and evaluation, and stakeholder engagement. Currently, as National Research Coordinator for ADB's Skills for Competitiveness Project, he leads TVET policy studies, evaluates training programs, and ensures compliance in procurement and contract management. Previously, as a National Expert with UNDP Cambodia, he developed waste management strategies and training materials. His diverse background includes roles in environmental impact assessment, socio-economic research, and teaching. Fluent in Khmer and English, he has also contributed as a translator for UN initiatives. Bandith's expertise spans gender inclusion, leadership, and project management, supported by professional training from institutions like NUS Business School and ITCILO. A collaborative and analytical professional, he is committed to sustainable development and skills enhancement in Cambodia.

Research Field

Thy Hy: skills and education, automotive sector, economic development, water supply, and sanitation.

Lyhour Hin: Digital agriculture, conservation agriculture, re-newable energy, data analytics using R.

Sophea Nhean: plant ecophysiology, cropping system, agri-tech and innovation, environment, climate change adaptation, and agricultural value chain.

Bandith Seng: policy research, monitoring and evaluation, stakeholder engagement, environmental impact assessment, and socio-economic research.