



Research article

Unlocking the key drivers of consumer purchase intentions for organic cosmetics: A study in Can Tho City, Vietnam

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ABSTRACT

This study's objective to evaluate Can Tho City's customer behavior with respect to organic cosmetics. The research was carried out utilizing a cross-sectional descriptive design and a collection of inquiries according to the theory of planned behavior (TPB), which evolved from the 5-point Likert scale. The survey was undertaken to interview 559 Can Tho City residents who use organic cosmetics, applying various interview questions to measure their behavior when considering the characteristics of the research subjects. Research findings show that customers have a positive attitude towards skincare using organic cosmetics, and the trend toward safe, environmentally friendly products is increasing. Factors such as perceived behavioral control, advantages, difficulty, and subjective norms have a strong influence on customers' purchasing intentions. What is quite interesting is that promotion does not significantly affect consumer choices.

In Viet Nam, organic cosmetics are not subject to any particular rules or regulations in this country, that lead many customers to see them as natural cosmetics. So that, businesses can develop policies, improve product quality specifically or create a discussion board where individuals may seek advice and impart additional organic cosmetics expertise. However, the number of survey samples is quite high (559), but this is still not statistically significant if you want to use it to analyze some anthropometric factors more closely and the factors surveyed are not all factors affecting the consumption behavior of organic cosmetics customers. The other researches in the future can use different factors and theories to find or verify.

1. Introduction

Nowadays, health issues are becoming one of the top concerns of consumers when buying products, especially when it comes to cosmetics. The tendency is to look for and use chemicals and additives made from organic sources. The cause of their appeal is that the

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harmful effects of artificial substances on both the ecosystem and human health have been clearly demonstrated. Today's marketing trends associate the use of cosmetics with a wholesome way of life and link the use of cosmetics with healthy eating habits. And organic cosmetics are considered one of the outstanding options in the green trend.

Several reasons influencing consumer behavior have been suggested by previous studies, which mentioned two categories, including selfish and altruistic motives. The study by Susanty et al. [1] emphasized that customer choices to use environmentally friendly products depend on easily detectable and manageable factors. Numerous studies demonstrate that consumers' previous experiences, environmental knowledge, and awareness of organic cosmetics have a significant influence on green buying intentions and conduct. Another study by Delistavrou et al. (2022) shows that earlier consumption patterns are favorably related to younger individuals who intend to buy environmentally friendly personal hygiene items [2]. Another factor is that consumers' past experiences were positively related to their purpose in buying organic personal care items through research [3]. Comparable to the research by Sharma et al. (2021), the consciousness factor about organic cosmetics has a favorable association with the intention to buy organic cosmetics [4].

According to a suggest by Zollo et al. [5] journal, e-commerce platform operators should focus on organic personal care product knowledge and information. In addition, the research indicates that informed consumers always pay attention to reports and chances regarding the merchandise's material, particularly what active ingredients are employed and how effective they are, the firm and its certificates, and so forth. Thus, the societal validation outcome of the assessment could be important when there is less time to choose products, which is a well-known tendency for all internet firms. Increasing the prominence of reviews can have an impact and influence the reader to choose one option over another. Put differently, managers need to arrange them so that customers can easily and widely see them.

The image of a doctor product label can be inserted to communicate with health benefits. This example implies that, marketing managers should modify their communication and advertising strategies to create a brand image that appeals to customers, because building brand trust may have substantial benefits [6,7]. As a result, they ought to customize their marketing and communication plans in order to present an impressive reputation to consumers. Moreover, the author demonstrated how legislatures ought to cooperate closely with producers to establish certifications and superior demands for these articles, or even create a dedicated department tasked with keeping an eye on producers to stop fraud [6].

A recent study [8] provided a comprehensive explanation of consumers' decision-making process via a view utilizing the SOR paradigm by identifying and classifying the primary environmental cues that encourage or limit their choices for organic cosmetics. The review's findings highlighted the need for a consistent, transparent, and clearly established regulatory or license system for organic cosmetics. This would increase customer trust by enabling them to make knowledgeable choices about green cosmetics.

This research was conducted to updated an overview of the organic cosmetics in Can Tho City, Viet Nam. Next, evaluate the direct impact of various factors on organic cosmetics purchasing behavior based on TBP theory and provide more information among suppliers, municipal lawmakers, directors, and individuals who use organic grooming goods. These essential findings can help them to comprehend the elements that influence consumer attitudes and reactions to organic items for private hygiene.

2. Literature review

The study by Ajzen (1985) established the Theory of Planned Behavior (TPB) to predict individual action based on certain criteria [9]. The element of perceived behavioral control was added to the Theory of Planned Behavior (TPB) in 1991 (presented in Fig. 1) [10]. Apparently, this model indicates that there are three factors that determine the identity of individual behavior, including subjective norms, attitude, and perceived behavioral control, which interact closely with each other [10]. These are the three strongest factors influencing customer purchasing intentions. Many other studies have also used and extended the TPB model to study a wide variety of behaviors, particularly health behaviors, consumer behavior, and environmental behavior [11,12,2,13,14,3,15]. Consumer values are the premise of attitude. Subjective norms relate to a person's convictions regarding whether or not their behavior is acceptable to others. The degree to which someone believes they are capable of carrying out a certain activity is known as perceived behavioral

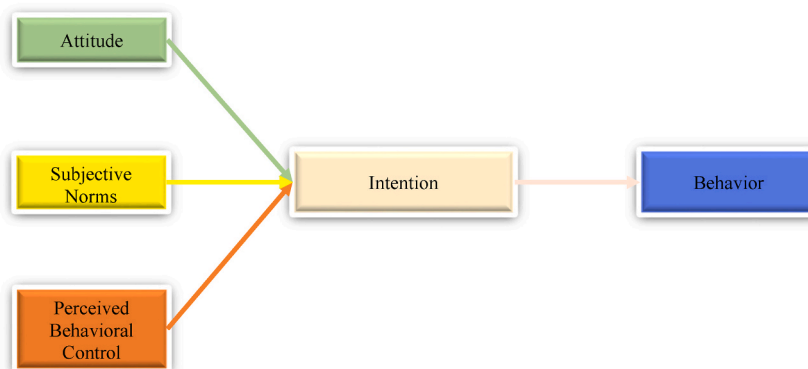


Fig. 1. The model of the theory of planned behavior.

control. The TPB theory’s variables are similar to the ones in the UTAUT model [16], such as social influence, facilitating conditions, effort expectations, and performance expectations. In addition, as per the findings of Dadhich et al. (2022) and Huong et al. (2024), they have combined an additional element of threat or difficulty with the UTAUT model [17,18]. Research by Lin et al. (2018) and Patak et al. (2021) shows that promotions strengthen the inclinations of clients to make purchases [19,20]. Marketing strategies that allow companies and businesses to reach potential customers in different niches bring positive feedback from consumers [21]. Therefore, the expanded TPB model in this study includes six separate factors: promotion, attitude, difficulty, perceived behavioral control, advantage, and subjective norm, that have been contained in the existing model that suggested exploring the structure determined in more detail (presented in Fig. 2).

2.1. Advantage

Belief in perceived advantage refers to customers’ perceptions of the benefits and challenges connected to an item or service, which enhance purchasing decisions [16]. According to Huong et al. (2024), when customers possess a thorough comprehension of the benefits and drawbacks of a product, they feel more comfortable making a purchase decision [18]. Similarly, Kumar et al. (2021) research points out that customers with a high perception of its advantages are more likely to pick up the product since they have good reasons to believe in it, and vice versa [6].

Hypothesis 1. Advantage influences Can Tho City consumers’ purchase intentions to buy in a positive manner.

2.2. Attitude

As defined by Ajzen (1991), attitude expresses the way someone feels about something, whether good or bad [10]. Previous studies have consistently shown that consumers’ attitudes positively influence their purchasing decisions [11,22,2,14]. In light of Hsu et al. (2017) explored how buyers see organic cosmetics as high-end, prestigious, and worth a premium because they believe that these products are made from natural ingredients, are safer, and promote healthier skin [13].

Hypothesis 2. Attitude influences Can Tho City consumers’ purchase intentions to buy in a positive manner.

2.3. Difficulty

Difficulties are defined as problems and risks encountered in an action requiring individuals to be willing to accept financial risks, uncertainty in actions, continuous innovation, and modification to achieve their desired goals [18]. Therefore, proactive planning and risk mitigation are essential. Previous studies by Huong et al. (2024) and Kumar et al. (2021), when buyers assume there is a lot of danger attached to a product, they tend to avoid it, as it directly affects their health [18,6].

Hypothesis 3. Difficulty influences Can Tho City consumers’ purchase intentions to buy in a positive manner.

2.4. Subjective norms

Subjective norms allude to the impact of social weight and the discernments of noteworthy others that energize buy eagerly [10]. Previous studies have shown a positive relationship between subjective norms and consumers’ intention to purchase organic cosmetics

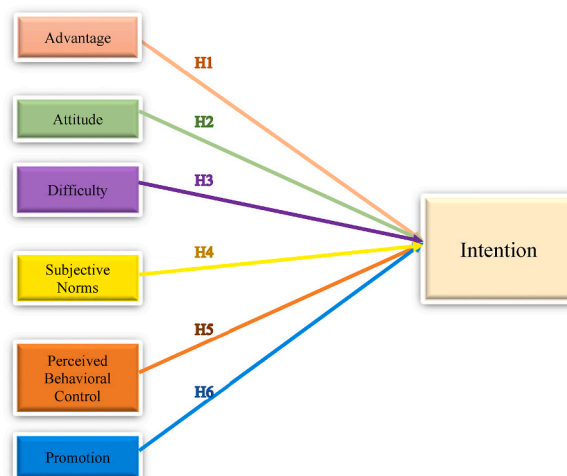


Fig. 2. The research model.

[12,22,3]. According to Limbu et al. (2022) recent research in Vietnam, subjective norms have a strong impact on purchase intention due to the influence of collectivistic culture [15].

Hypothesis 4. Subjective norms influence Can Tho City consumers' purchase intentions to buy in a positive manner.

2.5. Perceived behavioral control

Perceived behavioral control is a crucial factor influencing purchase behavior and purchase intention. The study conducted by Dangi et al. (2020) and Kalafatis et al. (1999) suggests that consumer belief leads to conscious actions, thereby mitigating negative impacts associated with organic products and enhancing purchase intention [12,14]. Someone with strong self-regulating ability has increased self-assurance and perceives greater feasibility in product choices [18,15].

Hypothesis 5. Perceived behavioral control influences Can Tho City consumers' purchase intentions to buy in a positive manner.

2.6. Promotion

Promotion is a way for a business to promote products to customers, aiming to increase product awareness and intent to buy [19]. In line with Patak et al. (2021), research shows that marketing activities have a direct impact on actual customer purchase behavior, acting as a moderating variable [20,23]. Through product promotion, distribution to target customer segments, continuous product improvement, and enhanced customer care, it increases profit margins and customer repurchase decisions [23].

Hypothesis 6. Promotion influences Can Tho City consumers' purchase intentions to buy in a positive manner.

3. Materials and methods

3.1. Subjects and study participants

The term "organic" means foods that have been cultivated, harvested, and processed in accordance with USDA guidelines. The USDA maintains that there are three different kinds of organic labeling: Being entirely organic denotes that all of the elements of the item are organic; Ninety-five organic denotes that more than ninety-five of the item's elements are organic, and created utilizing organic resources denotes that no less than seventy percent of the item's elements are organic.

Natural cosmetic ingredients contain a large percentage of natural substances derived from plants, animals, or minerals. Plants, dairy products, and egg products from intensive agriculture may be among them, though. Organic cosmetics utilizing natural ingredients from organic farms in their formulations. Moreover, organic cosmetics are natural cosmetics made up of at least 95 % certified organic ingredients. A natural cosmetic may not be organic, but an organic cosmetic product is also a natural cosmetic product.

Information was gathered from 559 local residents in Can Tho City, Vietnam, who were aware of or had purchased organic cosmetic products.

Participants living in Can Tho City who were aware of or had purchased organic cosmetics during the period from December 1, 2022, to December 31, 2023. To gather data for this study, a group of 20 volunteer students was recruited and underwent comprehensive training. The training program covered research ethics, communication skills, presentation skills, situation handling, and standardized data collection methods. Upon completing the training, the 20 volunteers divided into teams and proceeded to collect data at predetermined locations. The sampling locations were spread across the nine districts of Can Tho City, primarily encompassing shopping malls, parks, universities, and cosmetics retail stores. Data collection was conducted throughout the day, seven days a week. At each location, volunteers employed appropriate data-gathering strategies, such as inquiries and questionnaires. The collected data was formatted according to standardized procedures and stored securely to ensure data accuracy and confidentiality.

3.2. Selection criteria and exclusion criteria

Selection criteria: People living in districts of Can Tho city have knowledge or have used organic cosmetics during 2022–2023, and voluntarily agree to participate in the survey. Participants must give informed consent by checking in the box "I agree to attend the research" in the survey questionnaire.

Exclusion criteria: The research excluded people who do not know about organic cosmetics. And those who were unable to answer survey questions, did not provide full responses in the survey, or agree to participate within the survey area were also excluded. Regarding the direct interview method employing questionnaires, the sample was selected using a convenience method. The survey was conducted at universities, cosmetic stores, and other public areas in the districts of Can Tho City.

3.3. Design of survey questionnaires and scale

There are two different parts to the questionnaire: The general characteristics of the participants, such as their age, gender, educational background, occupation, dwelling area, funds, and marital status. Subsequently, participants are questioned on broad topics related to organic cosmetics, including the definition, origin, general ingredients, organic cosmetic certification, and how to

distinguish organic cosmetics from other types. The main part of the questionnaire is the main part, consisting of 28 questions divided into seven categories: perceived behavioral control (PBC), advantage (AV), attitude (AT), difficulty (DC), subjective norms (SN), promotion (PR), and purchase intention (I). In order to assess these characteristics, each participant's beliefs, actions, and perceptions were validated using the 5-point Likert scale, a measurement tool that is comparatively common in scientific research surveys. The following is the scoring system for the study's question responses: First indicates "completely disapprove", then comes "disapprove" partly endorse, "approve", and "completely approve". As part of the preliminary investigation, the research employed qualitative methods and interviewing techniques. More than 10 clients were interviewed in the beginning. To convey the goals of the study and the needs of the Vietnamese market, we spoke about, changed, and eliminated some information. After that, one hundred clients participated in an initial survey. With a total variable correlation coefficient of >0.3 and a Cronbach's alpha coefficient of ≥ 0.6 , the scale showed dependability.

3.4. Sample size

The criteria for leveraging EFA demand that the sample size be large and chosen based on the minimum size and number of measurable variables included in the analysis. According to Yam Limbu (2022) [24], the smallest ratio of 5:1 applies to the observed/measured variable. This indicates that in order to quantify a variable, at least five observed samples must be obtained; a 20:1 ratio is ideal. Because the scale of this study after adjustment includes 28 questions, the minimum sample rate is 140, and the optimal is 560. In fact, the number of samples we took in this study is 559, which is appropriate. Ensure minimum sample size conditions used in exploratory factor analysis (EFA).

3.5. Data analysis

In scientific studies, Cronbach's alpha test, developed in 1951, is widely used for assessing the reliability of a scale [25]. According to system theory, the scale's reliability is related to the value α , which ranges from 0 to 1. However, when α is 0.95 or higher, it indicates that definite questions are repeated or that the same question is asked in multiple ways. That means some items need to be modified or eliminated. Besides, the maximum recommended alpha value is 0.9 [26].

The multivariate statistical method, exploratory factor analysis (EFA), one may identify fundamental dimensions between the measured factors and the underlying structure and narrow down a large number of variables or factors to a smaller set. One of the criteria in EFA analysis is the Kaiser-Meyer-Olkin (KMO) coefficient, which is deemed reasonable for determining the appropriateness of the sample size when its value falls between 0.5 and 1 [27]. If this value is less than 0.5, it's unlikely that factor analysis is suitable for the study gathering data. An observed variable is considered to have good statistical significance if the factor loading is 0.5. If the factor loading is 0.7, then the observed variable is considered to have very good statistical significance [28]. In addition, if this value is less than 0.5, factor analysis is likely not appropriate for the research data set. The Bartlett test needs to have a significant result ($p < 0.05$). Furthermore, if the structure's eigenvalue is greater than 1 and higher compared to or equal to fifty percent, which represents the entire extracted variance, the structure is kept for interpretation. The most widely used rotation approach for EFA analysis is the one created by Hair et al. [29,30,31]. For determining if the pattern of distribution of sample data and the theoretical distribution are equivalent, the Kolmogorov-Smirnov test is used. The K-S test is employed in this study to evaluate the standard deviation of an assortment of average values that reflect the perceptions of consumers toward organic cosmetics [32].

A statistical approach to data analysis called confirmatory factor analysis (CFA) is used to figure out if a measurement model adequately accommodates the available data. Applying this strategy can enhance the validity and reliability of strategies, make models more appropriate, and provide more precise conclusions and solutions [33,34].

In subsequent generations, a multivariate statistical investigation method called structural equation modeling (SEM) is utilized to study the dimensional interactions between numerous variables in a model [35,36]. In order to better allocate resources and provide for clients, researchers can quickly and simply analyze the long-term correlations between variables of interest by employing SEM [37]. Additionally, the connection between potential variables is specified by the structural model. Scholars can use these relationships to describe theoretical predictions [38,39].

4. Results

4.1. Respondents' background

The study team meticulously cross-checked the data several times throughout the data collection process to ensure the legitimacy of the data. Following that, statistical and descriptive tables summarizing the results were created, showing frequencies and percentages.

The total number of survey participants was 559 people. The USD value was determined in February 2022 ($1\$ = 23.108$ VND).

4.2. Cronbach's alpha testing

Cronbach's Alpha test results for 28 observed variables show that 24 independent variables and four dependent variables are satisfactory, this indicates that these variables can be used for identifying factor analysis in EFA. However, an observed variable belonging to the Difficulty group did not meet the requirements due to Cronbach's Alpha coefficient <0.6 .

4.2.1. Independent component

4.2.2. Reliant element

Table 1
The characteristics of study sample.

Characteristics	Quantity (n = 559)	Regularity (%)	
Gener	Male	164	29,3
	Female	395	70,7
Age	Under 18	29	5,2
	From 18 to 35	403	72,1
	From 36 to 50	121	21,6
	From 51 to above	6	1,1
Educational background	Under high school	41	7,3
	High school	80	14,3
	College	121	21,6
	University and higher	317	56,7
Monthly income	Under 129.83 \$/Depending on the family	246	44,0
	From 129.83 \$ to under 259.68 \$	82	14,7
	From 259.68 \$ to under 346.21 \$	79	14,1
	From 346.21 \$ to under 432.78 \$	66	11,8
	Above 432.78 \$	86	15,4
Occupation	Pupil - Student	228	40,8
	Worker	45	8,1
	Healthcare worker	73	13,1
	Office staff	92	16,5
	Farmer	6	1,1
	Homemaker	31	5,5
	Civil servant	26	4,7
	Other	58	10,4
Area	Rural areas	157	28,1
	Urban areas	402	71,9
Price of organic cosmetics that you have purchased	Under 4.33 \$	102	18,2
	From 4.33 \$ to under 8.66\$	215	38,5
	From 8,66 \$ to under 21.64 \$	159	28,4
	From 21.64 \$ to under 43.28\$	59	10,6
	Above 43.28 \$	24	4,3
Marital status	Single	392	29,9
	Married	167	70,1
Type of organic cosmetic products that you use	Shampoo	304	54,4
	Cleanser	146	26,1
	Make-up remover	28	5,0
	Showing gel	51	9,1
	Serum	24	4,3
	Other	6	1,1
The origin of product that you use	Viet Nam	285	51,0
	USA	27	4,8
	Japan	99	17,7
	France	51	9,1
	Korea	83	14,8
	Australia	9	1,6
	Unknown	5	0,9
	Other	0	0
The way you buy organic cosmetics	Direct at shop	186	33,3
	Indirect (website, online shopping application, etc).	91	16,3
	Both	282	50,4

Note: From [Table 1](#) and it shows that the proportion of women buying organic cosmetics (395 people, 70.7 %) is three times higher than the proportion of men (164 people, 29.3 %). The majority of survey participants are aged 18 to 35 (403 people, 72.1 %), followed by the group aged 36 to 50 (121 people, 21.6 %). The remaining age groups have lower percentages, with people under 18 years old comprising 29 people (5.2 %) and those over 50 years old consisting of 6 people (1.1 %). A significant proportion of respondents have a high level of education, with 56.7 % (317 people) holding university and higher degrees, 21.6 % (121 people) of respondents having college education, 14.3 % (80 people) in high school, and the remaining 7.3 % (41 people) having an education level below high school. Most survey respondents with income under 129.83\$ or depending on the family have the highest rate of purchasing organic cosmetics (246 people, 44%). Those who buy organic cosmetics at least have incomes ranging from 346.2\$ to under 432.78\$ (66 people, 11.8 %). Furthermore, people use organic cosmetics in cities more than in rural areas. The majority of them are single (392 people, 70.1 %), and the remaining are married (167 people, 29.9 %). The most commonly used product type that people use is shampoo (304 people, 54.4 %). They often believe in using organic cosmetics originating from Vietnam (285 people, 51 %).

4.3. The EFA (explore factor analysis) technique

4.3.1. Explanatory independent variables

We conducted an exploratory factor analysis (EFA) for the subsection factors in the independent components after finding that the extracted value of variance was greater than 70 % (78.489 %), had a KMO coefficient of 0.865 ($0.5 \leq KMO \leq 1$), a significant Bartlett test (Sig. < 0.05). The extraction of 04 groups of factors at Eigenvalue = 1.256 (which is > 1) met all the necessary criteria.

In addition, Table 9 shows the outcome of the independent variables in the Rotated Component Matrix. Three new, unaltered components were produced using the survey variables of the original six components. Factor loading higher than 0.5 was met by all variables that were left over after EFA, indicating that they are statistically significant.

4.3.2. EFA for explanatory dependent variables

The analysis indicated an acceptable result, a KMO value is 0.797, a significant Bartlett's test (Sig value = 0.000). An Eigenvalue of 2.875 (>1) was obtained, and one factor was extracted. The total extracted variance accounted for 71.887 %, exceeding the 50 % threshold required for a satisfactory analysis. Subsequently, variables from the dependent component "(I): Purchase intention" were used in an EFA analysis.

It stayed at EFA since the result indicated that there was just one component with an Eigenvalue of 1. Table 10 shows the outcome of the dependent variables in the Rotated Component Matrix.

4.4. Confirming factor analysis results (CFA)

According to CFA results from Fig. 3, the model is deemed consistent with real data because it has TLI = 0.967, CFI = 0.972, GFI = 0.921 (all >0.9), RMSEA = 0.048 (<0.08), and Chi-square/df = 2.288. This shows the unidimensional scale. The factor rotation matrix shows how 27 observed variables converge to form a single factor group, where every variable has a factor loading factor greater than 0.5. The residuals of the data reach unidimensionality without any correlation. In the correlation coefficients for every pair of ideas that are substantially different from 1 at the 95 % confidence level, all P values are less than 0.05.

Fig. 3 displays the measurement model's CFA findings, which show the following conclusions: CMIN-df = 2.943, p = 0.000 characterizes the model. The model is deemed appropriate if these coefficients are greater than 0.9. Less than 0.08, or 0.048, is the RSMEA. In summary, the model provides a good match to the study data.

The results in Table 11 demonstrate how concepts with AVE > MSV and higher relationships between them support their uniqueness. Additionally, the scale exhibits the necessary reliability and convergent validity, as shown by the ideas' CR values (0.853–0.951; all >0.7) and AVE values (0.595–0.797; all >0.5). The study model is appropriate for a future CB-SEM analysis and is compatible with market data. This model has been used in recent years in scientific research.

4.5. The structural equation modeling (SEM) results

The results of SEM test are illustrated in Fig. 4. The GFI (Good Fit Index) has a respectable result of 0.900 within the ranges from 0 to 1. The GFI value model gets a good result of 0.921. The squared error of RMSEA is acceptable with the value is 0.049. Currently, reports allow RMSEA to reach at 95 % confidence, less than 0.08. The model satisfies the conditions and has a favorable index value of 2.340, which is less than 3. The value of the comparative fit index (CFI) is higher than 0.9. With a CFI score of 0.972, the model performance is good. The closer to 1 TLI index, the more suitable the result is. The TLI value of 0.966 in our model is considered good.

4.6. Hypothesis testing results

The effect factors are shown as follows in Table 12: The influence of difficulties, subjective norms, advantages, attitudes, and perceived behavioral control affect entrepreneurial intention, all with significance levels <0.05. Furthermore, because the promotion component is not statistically significant (p-value of 0.609 > 0.05), it has no beneficial effect on purchase intention.

Hypothesis 1. Advantage has a beneficial effect on consumer purchasing intention in Can Tho City.

Table 2
The advantage component's reliability.

Correlation of variable-total		
Variables	The correlation coefficient of total variables	The CA coefficient after removing variables
AV1. You think that organic cosmetics will cause less irritation to the body, especially the skin.	0.908	0.940
AV2. You think that using organic cosmetics will help improve and restore your skin.	0.937	0.917
AV3. You think that using organic cosmetics helps better support the treatment of skin diseases.	0.886	0.954
Cronbach's Alpha coefficient (CA): 0.957		

Note: The variables AV1, AV2, and AV3 were retained based on the requirements.

Table 3
The attitude component's reliability.

Correlation of variable-total		
Variables	The correlation coefficient of total variables	The CA coefficient after removing variables
AT1. You think that using organic cosmetics will lessen the rate of aging.	0.967	0.930
AT2. Do you think organic cosmetics are more effective than conventional cosmetics?	0.918	0.968
AT3. Do you think you can use it? The more environmentally friendly the cosmetics are, the higher the safety.	0.922	0.964
<i>Cronbach's Alpha coefficient (CA): 0.969</i>		

Note: Three variables AT1, AT2, and AT3 were kept based on the requirements.

Table 4
The difficulty component's reliability.

Correlation of variable-total		
Variables	The correlation coefficient of total variables	The CA coefficient after removing variables
DC1. You think that when using organic cosmetics, you may still experience side effects.	0.797	0.786
DC2. You think that there are so many types of organic cosmetics on the market that it is difficult to make the right choice.	0.795	0.785
DC3. You think that organic cosmetics are currently quite expensive.	0.787	0.783
DC4. You think that organic cosmetics do not bring many benefits and are not commensurate with the price they bring.	0.025	0.948
DC5. You think it is difficult to know which organic cosmetic brand is suitable for your body.	0.773	0.787
DC6. You believe that finding reputable products is difficult because the market has many fake or "self-labeled organic" products.	0.901	0.768
<i>Cronbach's Alpha coefficient (CA): 0.843</i>		

Note: Table 4 displays the internal reliability components. Among consumers' difficulties when using cosmetics, item DC4, '*Organic cosmetics do not bring many benefits and are not commensurate with the price they bring*', was removed because, after the variable was eliminated because, after the variable was eliminated, its CA coefficient (0.948) exceeded the current CA coefficient (0.843). The remaining five variables were not eliminated because the CA coefficient after removing the variable was lower than the current CA coefficient.

Table 5
The subjective norms component's reliability.

Correlation of variable-total		
Variables	Coefficient of correlation of total variables	The CA coefficient after removing variables
SN1. You use organic cosmetics based on the advice of family and friends.	0.543	0.838
SN2. You use organic cosmetics based on information online when you researched it yourself.	0.667	0.806
SN3. You use organic cosmetics according to the advice of your doctor and pharmacist.	0.717	0.792
SN4. You will prioritize buying organic cosmetics that many people trust and choose.	0.740	0.786
SN5. You will actively introduce the organic cosmetics you are using to friends and relatives if you find them effective.	0.587	0.827
<i>Cronbach's Alpha coefficient (CA): 0.843</i>		

Note: In Table 5, the five items (SN1, SN2, SN3, SN4 and SN5) were retained.

Hypothesis 2. Attitude has a beneficial effect on consumer purchasing intention in Can Tho City.

Hypothesis 3. Difficulty has a beneficial effect on consumer purchasing intentions in Can Tho City.

Hypothesis 4. Subjective norms has a beneficial effect on consumer purchasing intentions in Can Tho City.

Hypothesis 5. Perceived behavioral control has a beneficial effect on consumer purchasing intention in Can Tho City.

Hypothesis 6. Promotion has no beneficial effect on consumer purchasing intention in Can Tho City.

This is consistent with the research model presented in the study. In conclusion, difficulties, subjective norms, advantages, attitudes, and perceived behavioral control have beneficial and significant influence on the intention to purchase organic cosmetics.

Table 6
The perceived behavioral control component's reliability.

Correlation of variable-total		
Variables	The correlation coefficient of total variables	The CA coefficient after removing variables
PBC1. Do you know a place that sells quality organic cosmetics?	0.724	0.834
PBC2. You will compare many organic cosmetic brands before buying.	0.732	0.829
PBC3. Not only organic cosmetics, you have a habit of using products derived from nature and less related to chemicals.	0.757	0.819
PBC4. You think that using organic cosmetics will contribute to a healthier, less polluted environment.	0.681	0.851
<i>Cronbach's Alpha coefficient (CA): 0.891</i>		

Note: As stated by Table 6, the four variables, including PBC1, PBC2, PBC3, PBC4, and PBC5, were kept.

Table 7
The promotion component's reliability.

Correlation of variable-total		
Variables	The correlation coefficient of total variables	The CA coefficient after removing variables
PR1. Advertisements for organic cosmetics are very attractive, attracting customers to learn about buying products.	0.861	0.898
PR2. You are always provided with appropriate advice and clear information from the seller to help you make your choice easily.	0.863	0.895
PR3. Organic cosmetics are diverse in products and always have many diverse promotions.	0.850	0.904
<i>Cronbach's Alpha coefficient (CA): 0.930</i>		

Note: In Table 7, the three variables (PR1, PR2, and PR3) were retained. In general, from Tables 2–79). The remaining five components, which also demonstrated a good level of reliability were: advantage (0.957), subjective norms (0.843), difficulty (0.843), perceived behavioral control (0.891), and promotion (0.930).

Table 8
The purchase intention component's reliability.

Correlation of variable-total		
Variables	The correlation coefficient of total variables	The CA coefficient after removing variables
I1. You will buy organic cosmetics when needed.	0.574	0.792
I2. You will buy organic cosmetics when you clearly understand the product.	0.679	0.742
I3. You should prioritize choosing a trial product (small, cheap) before using it long-term.	0.699	0.741
I4. If you feel you are suitable for a product line, you will try other products of the same brand.	0.594	0.785
<i>Cronbach's Alpha coefficient (CA): 0.813</i>		

Note: As stated by Table 8, any item that satisfied the requirements was kept in the purchase intention component. One factor (DC4) was removed from the original scale after the Cronbach's alpha test was performed because it lacked reliability (Table 4). However, 6 factors in the dependent component and 23 factors in the independent components that fully satisfied the conditions were kept (the CA coefficient after removing variables with a coefficient less than the present one and the total variable correlation coefficient >0.3).

Promotion does not have a beneficial effect consumer purchase intention because it is not statistically significant.

5. Discussion

Advantage factors have a positively influence consumers' intention to purchase organic cosmetics in Can Tho City. Moreover, trees with trunks and branches are valued by the Kotoko and Choa Arabian ethnic groups in Korusseria (the Far North Region of Cameroon) as the ideal material for different beauty purposes, according to insights from a paper on plants used in cosmetics [40]. They use over 40 % of the plants for skincare. These plants, aside from their application in dermatology, possess antioxidant properties and can serve as ingredients in perfumes, offering anti-inflammatory, antibacterial, and wound-healing effects. Many cosmetics also contain ingredients that are sourced from seaweed and marine creatures. Numerous medicinal plants with biological activity that are suitable for cosmetic application may be derived from different types of marine life. An extremely common example would be algae. Algae hydrates the skin, supports circulation, activates cell renewal and metabolism, regulates sebaceous gland activity, regenerates tissue, has

Table 9
Internal reliability of the rotated component.

Observed variables	Factor loading					
	1	2	3	4	5	6
DC6	0,959					
DC3	0,893					
DC1	0,888					
DC2	0,886					
DC5	0,880					
SN2		0,814				
SN3		0,784				
SN4		0,782				
SN1		0,766				
SN5		0,649				
PBC3			0,800			
PBC4			0,784			
PBC1			0,739			
PBC2			0,688			
AT1				0,900		
AT2				0,887		
AT3				0,876		
AV2					0,895	
AV3					0,858	
AV1					0,855	
PR1						0,932
PR2						0,926
PR3						0,914

Table 10
Internal reliability of the intention component.

Dependent variable	Factor loading
	1
I4	0,860
I2	0,855
I1	0,847
I3	0,830

Note: As shown in Table 10, the rotated component matrix results indicated that 4 observed variables converged into a single element group, with all observed variables having a Factor Loading coefficient >0.5 . Based on the EFA analysis result, all factors may be used in regression and correlation analysis for both independent and dependent variables. According to the results of the EFA analysis There was no need for renaming because all of the subsections converged into a single factor. Factor loadings greater than 0.5 showed a substantial association between the factor and the subsections. In particular, a p-value of 0.000 was found for survey variable I4. In summary, there is no normal distribution of the data. Because of this, a non-parametric test will be employed to determine if groups of qualitative factors vary in terms of purchase intention (I).

anti-inflammatory effects, and increases skin resistance [41]. In general, we can see that the potential of organic cosmetics is huge, given the benefits they bring. One other reason to encourage customers is the well-established benefits of using biologically active chemicals derived from natural sources in cosmetic applications [42].

Quantitative results indicate a group of attitude factors towards organic cosmetics that influence the buying behavior of organic cosmetics. The Cosmetic Toiletries and Perfumery Association (CTPA, 2018) summarizes that views of customers about product attributes, including function, components, packaging, scent, and cost are all affect consumers' decision to buy. In Britain, about a quarter of women often do not consider analyzing the ingredients in their cosmetics and instead focus on the product's function [43]. Women in China were found to base their cosmetic purchases on three factors: quality, cost, and delivery time [24]. Addressing the cognitive aspects of attitudes highlights the fact that product marketing has the power to teach and modify consumer views [21]. As a result of both internal and external influences, including cultural norms, social standing, and family preferences, consumer attitudes fluctuate from person to person. These internal influences include varying psychological and emotional states. Previous research has

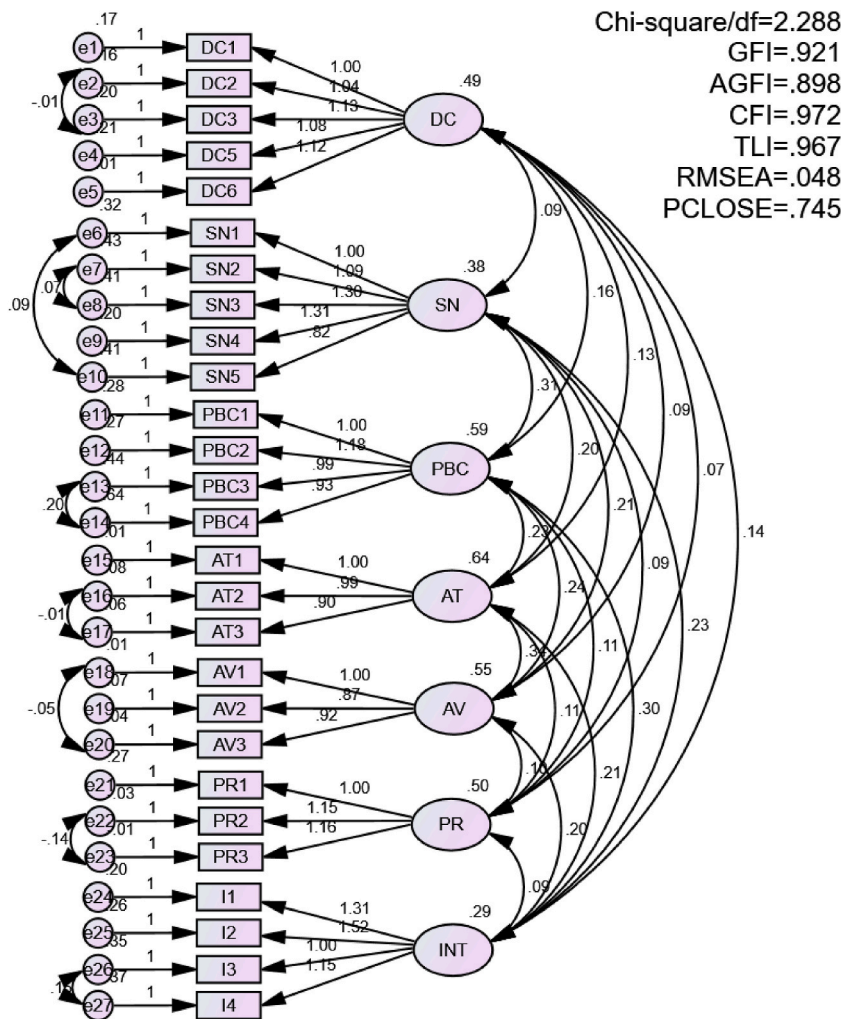


Fig. 3. Confirmatory Factor Analysis (CFA) testing result

Table 11
 Convergent validity and discriminant validity test results.

	CR	AVE	MSV	MaxR (H)	DC	SN	PBC	AT	AV	PR	I
DC	0,951	0,797	0,144	0,989	0,892						
SN	0,865	0,564	0,486	0,885	0,198	0,751					
PBC	0,861	0,609	0,524	0,878	0,294	0,664	0,781				
AT	0,972	0,921	0,330	0,988	0,230	0,415	0,381	0,960			
AV	0,971	0,918	0,330	0,987	0,175	0,457	0,425	0,575	0,958		
PR	0,965	0,904	0,051	1,007	0,150	0,199	0,210	0,185	0,196	0,951	
I	0,853	0,595	0,524	0,872	0,380	0,697	0,724	0,494	0,490	0,226	0,771

shown that consumers are more likely to respond favorably to green product support when they have a greater grasp of environmental concerns [44]. In the process of creating consumer attitudes, knowledge is thought to be crucial [45,18]. People who strongly supported green cosmetics in the study had more in-depth understanding of organic cosmetics, including clear norms for cosmetic measurement and consumer definitions. These responders fit the profile of green consumers, who, according to Hailes (2007), incorporate environmental preservation into all of their daily purchases [46]. Those who strongly supported green cosmetics because they cared about the environment also said they would want to learn more about organic cosmetics from other publications, including articles, magazines, and more online writing [47].

In this study, obstacles to using organic cosmetics have a great influence on the purchasing behavior of organic cosmetics among consumers in Can Tho City. In fact, the higher cost of organic cosmetics may result in fewer consumers buying them. Additionally, consumers who prioritize environmental health are likely to be interested in the value of environmentally friendly cosmetics [48].

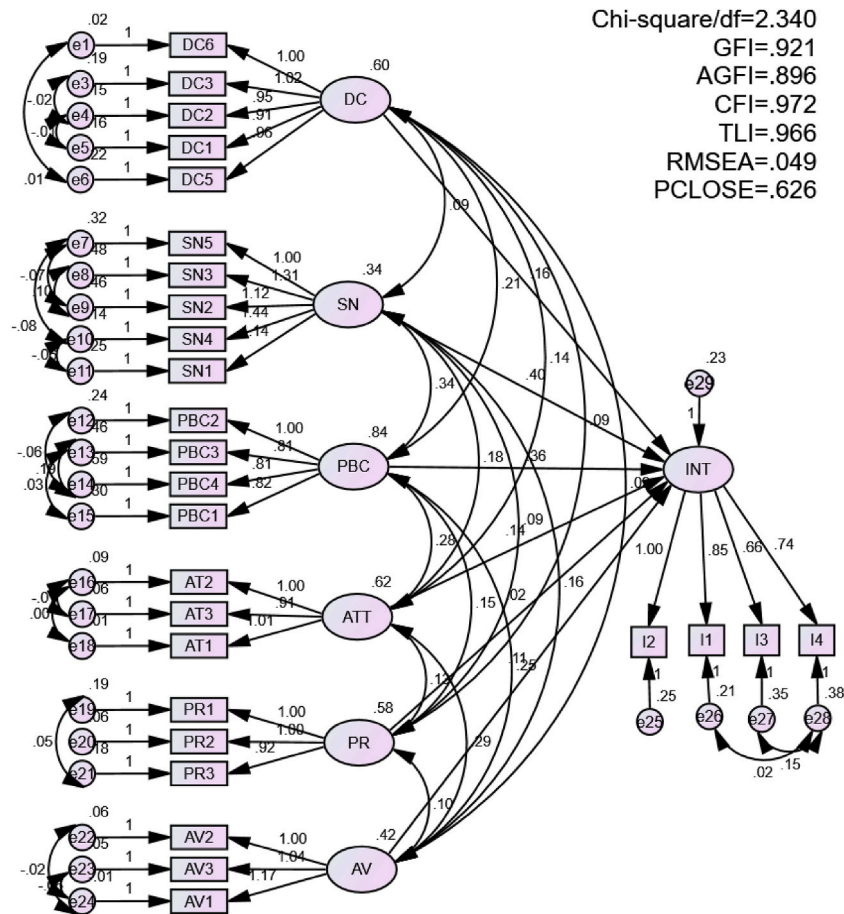


Fig. 4. Structural Equation Modeling (SEM) testing result.

Table 12
 Description of hypothesis testing results.

			Estimate	S.E.	C.R.	P	Hypothesis
I	<—	DC	0.163	0.036	4.577	***	Accepted
I	<—	SN	0.402	0.069	5.842	***	Accepted
I	<—	PBC	0.360	0.046	7.818	***	Accepted
I	<—	AT	0.138	0.041	3.349	***	Accepted
I	<—	PR	0.018	0.036	0.511	0.609	Rejected
I	<—	AV	0.114	0.048	2.369	0.018	Accepted

Customers with high health worries are frequently not aware of the hazards associated with purchasing organic goods, which is why there is a substantial moderating influence of health concern between the risk barrier and the desire to purchase environmentally friendly cosmetics [49,50]. Furthermore, when selecting cosmetics, people give careful thought to the health of their skin, and they believe that organic goods are healthier than traditional ones [49]. Therefore, the relationship between traditional obstacles and buying intentions was greatly mitigated by health concerns. This conclusion may be explained by customers' perceptions that organic cosmetics are healthier than conventional ones. Consequently, they believe in these products and never feel the need for any additional products or any significant changes in their current lifestyle. At the same time, organic cosmetics are not easily accessible, and there are many fakes and green products on the market thereby affecting people's perceptions of consumption in regard to worth and reputation [12,41]. The encounter with off-brand merchandise leads to consumers not choosing environmentally friendly cosmetic products, regardless of their level of health concerns.

Another group of factors, social influence, also causes certain changes in organic cosmetics consumption behavior. Attitudes reveal one's beliefs, passions, and impressions of oneself to others [4]. The majority of respondents stated that they would like to try brands and products that friends and family, particularly those with excellent skin or who are makeup professionals, have suggested. Word of mouth has a powerful effect, promoting positive attitudes and a readiness to try and purchase. Customers are happy to tell other

customers about their experiences with certain brands and cosmetic items, and word-of-mouth spreads when customers offer recommendations or commentary [51]. The findings demonstrate a considerable association between social norms and purchase behavior for environmentally friendly clothing, with personal norms acting as a key mediating factor in this relationship. Therefore, it is essential to consider social influence factors, as they have a profound influence on the buying behavior of organic cosmetics, allowing for a clearer understanding. Ethical duty has a favorable and significant influence on clothes buy intention, from those with an organic label to those created with recycled materials [52], according to Hwang and Kim's (2015) study on the relationship between ethical obligation and apparel purchase intention [53]. Responsible people are more likely to take part in climate change mitigation activities, such as planting trees, using more energy-efficient appliances, and reducing their consumption of disposable goods, in order to safeguard coral reef ecosystems [54]. Based on a feeling of moral duty, this shows that individuals with strong personal norms are more inclined to purchase ecologically friendly apparel [55]. According to some earlier research, conduct is influenced by social norms both directly and indirectly through the personal standards of environmental friendliness [10,19]. Our findings demonstrate the critical role that social norms play in shaping people's pro-environmental behavior, both directly and indirectly, by strengthening their sense of personal responsibility to purchase eco-friendly apparel.

Perceived behavioral control is a positive predictor, which is consistent with previous studies by Ghazalia (2017) [49], Kim-Chung (2011) [3]. This implies that those with strong moral convictions purchase eco-friendly apparel because they believe they have a moral obligation to do so [55]. An individual's behavioral intentions are driven by their perception of behavioral control [49]. Besides, it also affects actual behavioral behavior. Because before buying a product, people often take the time to learn about information about product ingredients, sourcing policies, animal testing and assessments on their skin type. The promotion has an influence on consumer intention to buy and use organic cosmetics in Can Tho City, but the impact is not statistically significant. This is different from other studies [19,20] and might be clarified by the knowledge that promotional activities for organic cosmetics in Can Tho are not yet well-developed. In addition, this difference can come from many reasons such as differences in history, culture, beliefs, religion, geographical location, economics, society, language, etc. Therefore, businesses can strengthen their promotion activities on various media channels, implement impressive and effective marketing strategies to bring organic cosmetics closer to all consumer groups.

6. Conclusion

This study examines the link between variables influencing customers' intentions to purchase organic cosmetics in Can Tho City, Vietnam. Through the lens of the extended TPB model as a theoretical framework, evaluate and identify a few factors that influence consumer choice, then reflect and explain the meaning of each consumer's decision to consume organic cosmetics. Research findings show that customers have a positive attitude towards skincare using organic cosmetics, and the trend toward safe, environmentally friendly products is increasing. Factors such as advantages, difficulty, subjective norms, and perceived behavioral control have a strong impact on customers' purchasing intentions. What is quite interesting is that promotion does not significantly affect consumer choices. In addition, businesses can develop policies, improve product quality specifically to meet customer needs, retain potential customers as well as popularize their own products [49,6,47,20,56].

6.1. Contribution and implication

From a scientific perspective, these findings provide behavioral insights that are critical for the development of organic products and help formulate novel, enhanced solutions. Improve and develop new preparation methods. Promote future research on the biological effects of natural ingredients with materials available in the region. From there, develop new treatment methods for dermatological diseases from organic cosmetic products. This information enhances strategy, enabling companies to personalize interactions, build rapport, and foster enduring relationships with consumers. This increases consumer pleasure and encourages market sustainability.

Marketing activities have not been given much attention in the Can Tho City market, enabling companies to personalize interactions, establish credibility, and foster enduring connections with clients. Companies should develop appropriate marketing strategies focusing on the female customer segment, specifically those aged 18 to 35, as this is a large group interested in organic cosmetics. Besides, they have to raise product quality, train excellent customer care and sales staff instead of investing too much in flashy advertising services, and organize trade promotion programs for customers to experience sample products, thereby boosting communication campaigns.

Research results from understanding the influence of several factors on organic cosmetics purchasing behavior provide a more specific perspective. Besides, it also advocates considering a healthy and environmentally friendly lifestyle.

6.2. Limitations and future research

The TPB theoretical framework applied to survey behavior is quite useful, but it's not comprehensive for certain cases. The number of survey samples is quite high, at 559, but this is still not statistically significant if you want to use it to analyze some anthropometric factors more closely. Future articles may have more information on alternative methods to fill this research gap. The factors surveyed are not all variables influencing consumer's behavior of organic cosmetics customers. Other or future studies will also have factors that need to be combined for consideration. To provide the most comprehensive perspective.

Ethical approval

This study was approved by the Ethics Council in Biomedical Research of Can Tho University of Medicine and Pharmacy (Approval number 22.140.SV/PCT-HĐĐĐ). For minors, when participating in the interview, a guardian's or parent's signature must be included in the survey form. The survey process is based solely on the principles of volunteerism and participants must give informed consent by checking in the box "I agree to attend the research" in the survey questionnaire.

Consent for publication

The authors affirm that their contribution to this work has not been previously published elsewhere.

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Data could be available upon request.

CRedit authorship contribution statement

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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