AN EXTENDED MODEL OF CONSUMER BEHAVIOR FOR VEGETABLES IN THE MARKET IN INDONESIA

a Mery Berlian, b Abdul Wahib Muhaimin, c Nuhfil Hanani, d Silvana Maulidah

ABSTRACT

Purpose: In this study, principal component analysis (PCA) was used to identify the key factors influencing consumer behavior in the context of vegetable consumption in traditional and modern markets.

Theoretical reference: This common pattern of small-scale and subsistence-based vegetable production in agriculture, typically meeting local needs, results from limited competitiveness in the global vegetable value chain, largely due to relatively small national-scale vegetable production.

Method: The use of multilevel structural equation modeling (MSEM) was employed to analyze consumer behavior at different levels within the sales model. This study involved the use of an online questionnaire that sought to explore vegetable consumer behavior in the year 2023.

Results and Conclusion: The study emphasizes the dominant role of the economic factor in shaping consumer behavior, with economic conditions and personal income being pivotal influencers of purchase decisions. Cultural factors also play a positive role in decisions, highlighting cultural considerations. Social dynamics, psychological factors, and personal habits contribute significantly, while effective marketing strategies and customer satisfaction are crucial for influencing choices and fostering loyalty in the vegetable market.

Implications of research: Furthermore, the study indicates that effective marketing strategies have a positive impact on purchase decisions and consumer loyalty. Well-designed marketing campaigns, promotions, and branding efforts can motivate consumers to choose specific vegetables and foster loyalty, highlighting the importance of strategic marketing in the vegetable market of Pekanbaru City.

Originality/value: Additionally, the study emphasizes the intrinsic connection between consumer satisfaction and loyalty, emphasizing the significance of addressing consumer needs and expectations to cultivate and sustain loyalty in the vegetable market. Businesses that prioritize customer satisfaction are likely to enjoy repeat business and positive word-of-mouth referrals, enhancing their position in the market.

Keywords: consumer loyalty, customer satisfaction, marketing strategies.

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UM EXTENSO MODELO DE COMPORTAMENTO DO CONSUMIDOR PARA VEGETAIS NO MERCADO NA INDONÉSIA

RESUMO

Finalidade: Neste estudo, a análise de componentes principais (APC) foi utilizada para identificar os principais fatores que influenciam o comportamento do consumidor no contexto do consumo de vegetais em mercados tradicionais e modernos.

Referência teórica: Este padrão comum de produção vegetal em pequena escala e baseada em subsistência na agricultura, tipicamente atendendo às necessidades locais, resulta da competitividade limitada na cadeia de valor vegetal global, em grande parte devido à produção vegetal relativamente pequena em escala nacional.

Método: O uso de modelagem de equações estruturais multiníveis (MSEM) foi empregado para analisar o comportamento do consumidor em diferentes níveis dentro do modelo de vendas. Este estudo envolveu o uso de um questionário on-line que procurou explorar o comportamento do consumidor de vegetais no ano de 2023.

Resultados e Conclusão: O estudo enfatiza o papel dominante do fator econômico na formação do comportamento do consumidor, com condições econômicas e renda pessoal sendo os principais influenciadores das decisões de compra. Os fatores culturais também desempenham um papel positivo nas decisões, destacando as considerações culturais. Dinâmica social, fatores psicológicos e hábitos pessoais contribuem significativamente, enquanto estratégias de marketing eficazes e a satisfação do cliente são cruciais para influenciar as escolhas e promover a lealdade no mercado vegetal.

Implicações da pesquisa: Além disso, o estudo indica que estratégias de marketing eficazes têm um impacto positivo nas decisões de compra e na lealdade do consumidor. Campanhas de marketing bem projetadas, promoções e esforços de branding podem motivar os consumidores a escolher legumes específicos e promover a lealdade, destacando a importância do marketing estratégico no mercado de legumes da cidade de Pekanbaru.

Originalidade/valor: Além disso, o estudo enfatiza a ligação intrínseca entre satisfação e lealdade do consumidor, enfatizando a importância de atender às necessidades e expectativas do consumidor para cultivar e sustentar a lealdade no mercado vegetal. As empresas que priorizam a satisfação do cliente são susceptíveis de desfrutar de repetição de negócios e referências positivas, melhorando sua posição no mercado.

Palavras-chave: lealdade do consumidor, satisfação do cliente, estratégias de marketing.

1 INTRODUCTION

The agricultural sector has a central role in Indonesia's economic development, namely as a source of food, industrial raw materials, and income for rural areas, as well as supporting national economic growth. In this context, the horticulture sector is one of the important elements in ensuring the nutritional aspects of the Indonesian people (Prang
et al., 2023). The geographical location of Indonesia, which is located in the tropics, is very advantageous because the tropics have various types and varieties of plants (Amaliyah, 2023). Vegetables are an important part of people's consumption because they contain essential vitamins and minerals for human health (Manalu & Dewanti, 2021). Research indicates that families with kids are more concerned about eating healthily than are single people who like fast food. In this regard, it has also been noted that children's healthy diets are important (Goezek et al., 2019).

Vegetable crops are part of the horticultural commodity subdivision and have a significant economic impact at the national level. Across various scales, including small, medium, and large, vegetable crops serve as essential income sources for communities and farmers. The presence of horticultural commodities, including vegetables, plays a central role in maintaining food balance, requiring sufficient availability, high quality, consumption safety, affordability, and accessibility for all segments of society (Sinaga et al., 2023). Results of consumer research indicate that the social status of the consumer and family have a significant impact on the attitude of Romanian consumers towards organic fruits and vegetables (Poland et al., 2018).

In Indonesia, horticultural commodities such as vegetables play a crucial role in enhancing the nutritional levels of the population, boosting farmers' incomes, and capitalizing on market opportunities both domestically and internationally (Kipdiyah et al., 2013). Data on the types of vegetables that are mostly produced in Indonesia in 2022.

![Figure 1.1 Most Vegetables Produced in Indonesia in 2022](source: dataindonesia.id (2023))

The report from the Central Statistics Agency (BPS), Indonesia's total vegetable production reached 14.8 million tons in 2021. Among these, shallots stood out as the most produced vegetable, with around 2 million tons produced during that year. Cabbage
followed in second place with a production of 1.43 million tons. Bird's eye chili also played a significant role in domestic vegetable production, contributing approximately 1.38 million tons. Potatoes and bell peppers had similar production quantities, each around 1.36 million tons. Tomato production was recorded at 1.1 million tons. Additionally, Indonesia cultivated mustard greens, totaling about 727,467 tons, while carrot production within the country reached approximately 720,090 tons in the preceding year (Widi, 2022).

The report from the Central Statistics Agency (BPS), in September 2021, the average per capita expenditure on purchasing vegetables was approximately Rp48,654 per month. This marked a decrease of 9.67% from the figure in March 2021, which was Rp53,864 per month. Despite the decline, expenditures on vegetables still contributed 8.41% of the total per capita expenditure on food every month. This fact positions vegetables as one of the highest-spending food commodities after processed food and beverages, cigarettes, and rice (Rizaty, 2022).

As observed from its trend, the average per capita expenditure on vegetable consumption tends to increase every year. The peak of per capita spending occurred in March 2021, reaching Rp53,864 per month. Based on the location of residence, the average per capita expenditure on vegetable consumption in urban areas is approximately Rp49,104 per month, while in rural areas it reaches Rp48,054 per month. In terms of the most commonly consumed vegetables, water spinach and spinach are the most popular among the Indonesian population. The average weekly consumption for water spinach is about 0.078 kg, and for spinach, it's about 0.067 kg (Rizaty, 2022).

Riau Province is one of the regions in Indonesia that plays a significant role in horticultural crop production. According to the report from the Riau Central Bureau of Statistics (2022), when determining the leading commodities in horticulture, particularly vegetables, in Riau Province, the main determining factor is the high production or market demand. The province boasts several flagship seasonal horticultural crops, including chili peppers, longbeans, eggplants, cucumbers, water spinach, and spinach.

In the agricultural category of Riau Province, the economic contribution was 22.92 percent in 2019, which then increased to 26.83 percent of the Gross Regional Domestic Product (GRDP) of Riau in 2020. Within this category, the sub-category of horticulture holds an important role, though not the primary one, contributing 0.63 percent to Riau's total GRDP and experiencing growth over the last five years.
This highlights the common pattern of small-scale and subsistence-based vegetable production in agriculture, where vegetable cultivation occurs on a small scale and tends to meet local needs. This pattern often emerges due to limited competitiveness in the global vegetable value chain, primarily because of the relatively small nation-scale vegetable production.

Consumer quality preferences have a feedback effect at the start of the industrial chain, even though consumers are at the end of the vegetable industry chain (Nardi et al., 2020). Suppliers of vegetables must modify their marketing and production plans to reflect consumer preferences for quality. Global experts have carried out a large number of studies on the mechanics of vegetable consumption in order to investigate the key aspects affecting this consumption. However, past exploration has mostly used consumer psychological markers as exploration variables, including knowledge, subjective norms, and trust (Cheung & To, 2019; Jaiswal & Kant, 2018; Nagaraj et al., 2021). Research related to consumer preferences for vegetable quality attributes is relatively limited. In fact, the intrinsic attributes of plant-based products are the first information consumers obtain in actual consumption scenarios, and they directly influence their consumption decisions (Symmank, 2018).

2 THEORETICAL FRAMEWORK

Consumer behavior is a highly complex category, and its multidimensional nature means that the issue can be analyzed in various ways. From a practical standpoint, consumer behavior plays a significant role in the development of markets for specific products (Szul, 2016), can impact the state of the natural environment (Mańkowska-Wróbel, 2015), and having knowledge about consumer behavior allows companies to adapt their marketing communication methods to meet customer needs (Oszust & Stecko, 2020). A detailed analysis of opinions, consumer behavior, or factors influencing consumer choices serves as the foundation for strategic decisions, enabling companies to align their offerings with customer needs and expectations (Liczmańska, 2015). Consumer behavior and the factors that determine it have also been a significant area of research in economic sciences for many years (Malter, Holbrook, Kahn, Parker, & Lehmann, 2020).

The four main factors that affect the consumer buying behavior are personal psychological, cultural social and economic factors. Personal factors encompass elements
such as age, life stage, occupation, personality, lifestyle, and values, all of which significantly influence consumer buying behavior. These factors can have both direct and indirect effects on consumer behavior. Some directly impact consumer buying decisions, while others have an indirect influence. Companies should pay close attention to personal factors, as they are applicable to everyday and specific products alike (Kotler & Keller 2016, Kotler et al., 2017).

The psychological factor, also referred to as the internal factor, plays a significant role in influencing consumer buying behavior (Ali & Ramya, 2016). The environment is a key determinant in the consumer purchasing process (Kotler & Keller, 2016). People are often influenced by the buying decisions of others, such as friends, family members, and colleagues (Rani, 2014). Consumer excitement for a new product introduced in the market is also attributed to the environment, which is closely tied to psychology. Some companies prioritize this factor. The psychological factor comprises four elements: motivation, perception, learning, and memory (Kotler & Keller, 2016).

The social factor significantly influences consumer buying behavior, encompassing various elements such as social groups, networks, family, and word-of-mouth recommendations. Social groups, according to Kotler, are composed of two types: membership groups, to which individuals belong and interact with continuously, and reference groups, which serve as points of comparison or reference for attitudes and behavior. Family, friends, neighbors, and coworkers constitute primary groups, while secondary groups, like religious or professional associations, are more formal and involve less continuous interaction. Word-of-mouth, particularly from trusted friends, family, associates, and other customers, exerts a strong influence on buying behavior (Kotler et al., 2017).

The economic factor, as the fourth influential factor in consumer buying behavior, covers elements such as personal income, family income, income expectations, savings, consumer credit, and other economic indicators. Personal income, reflecting an individual's post-tax earnings, plays a pivotal role in shaping purchasing decisions and brand preferences, with a significant impact on consumer behavior (Gandhi & Choudhry, 2021). Family income is the combined earnings of multiple family members, shaped by the family's structure and employment statuses. Income expectations involve anticipations of additional income from sources like bonuses or overtime pay, while savings represent money set aside after monthly expenses. Consumer credit comprises
funds extended by banks, often via credit cards, and economic factors like inflation, slowdowns, and government policies also influence consumers' purchasing power, with income level playing a pivotal role in determining their ability to buy products or services (Ali & Ramya, 2016).

Purchasing decisions refer to the choices made by consumers when they decide to acquire and enjoy goods or services from a range of available options (Kotler & Keller, 2022). These purchasing decisions hold significant importance as they shape the direction of future marketing strategies adopted by companies. Given the diversity among consumers in terms of demographics, psychographics, psychology, and other factors, the decisions related to the utilization of products, be it goods or services, can exhibit a considerable degree of variation. Consumer purchasing decisions occur when they have received services, and afterward, they experience satisfaction or dissatisfaction.

The concept of purchasing decisions is closely related to the concept of consumer satisfaction (Indrasari, 2019). Understanding the level of consumer involvement in a product or service means that marketers are trying to identify the factors that make someone engage or not engage in purchasing a product or service (Megayani et al., 2022). Kotler and Keller (2022) outline several key indicators in product purchases, including the following: product types, product attributes, product brands, product sales locations, quantity of products purchased, timing of the purchase, and the chosen payment method.

Consumer satisfaction can be described as an individual's overall contentment with a product or service, impacting their likelihood to repurchase, spread word-of-mouth recommendations, contribute to brand image, and enhance brand reputation (Fu et al., 2022). This definition closely aligns with Oliver's concept of customer satisfaction, which characterizes it as a judgment reflecting the pleasure derived from consuming products or services (Yu et al., 2023). The definition of customer satisfaction may vary depending on the context; for products, it's often seen through repeated purchases, while for services, it's reflected in customers' continued use of those services (Abusafia et al., 2022). Satisfied customers not only intend to repurchase but also become advocates for the items and services they find most appealing (Ahmed et al., 2023).

Consumer satisfaction plays a pivotal role in influencing consumer loyalty. Consumer satisfaction is the feeling experienced by consumers when purchasing a product. This variable is closely related to the intention to repurchase, and it also affects word-of-mouth marketing (Agha et al., 2017). There are several factors that can influence
consumer satisfaction with the products they purchase, including perceptions of product quality, actual product quality, price, and personal and situational factors (Rangkuti, 2018). Consumer satisfaction occurs when consumers feel that the product or service they receive meets or even exceeds their positive expectations. Consumer satisfaction is the feeling experienced by consumers when deciding to purchase a product, and when they find that the product they receive meets or even exceeds their expectations (Santini et al., 2018).

This assertion is corroborated by studies conducted by (Leninkumar, 2017) which emphasize that brands must prioritize product quality and exceptional service to ensure consumer satisfaction. Once Consumers are satisfied with a brand, they are more inclined to exhibit loyalty. Consumer satisfaction has a substantial and positive impact on consumer loyalty (Famiyeh et al., 2018; Meesala & Paul, 2018; Teeroovengadum, 2022). Consumer experience in purchasing a product can lead to sustained interest in a brand (Keshavarz & Jamshidi, 2018). In every company's planning, consumer satisfaction is the most important consideration because it can serve as a driver for sustainable consumer loyalty (Slack & Singh, 2020). Achieving customer satisfaction requires meeting or exceeding customer expectations, with the measurement of satisfaction relying on five dimensions: reliability, responsiveness, assurance, empathy, and physical evidence (Setiono & Hidayat, 2022).

From a marketing perspective, loyalty encompasses both attitude and behavior and extends from employee loyalty to customer loyalty (Seridaran & Mohd Noor, 2021). Loyalty is a highly significant attribute that underpins a company's success or failure (Hapsari et al., 2020). It serves as a key factor for long-term company success (Y. L. Lee et al., 2019). Customer loyalty can be understood as beneficial behavior towards a company, evidenced by the likelihood of customers engaging in repeat business with a specific retailer, exhibiting a preference for a particular brand, and engaging in word-of-mouth advocacy (Rasool et al., 2021).

Consumer loyalty refers to a consumer's strong inclination and commitment to repeatedly purchase a particular supplier's service or products (Balci et al., 2019). Consumer loyalty as a consumer's intention to not only speak positively about a product but also recommend it to others and continue purchasing it in the future (Lai, 2019). Consumer loyalty is a deep-seated commitment and belief that consumers hold toward a product, brand, marketer, or service that sets it apart from competing products (Hidayanti,
Loyalty categorize into two types: behavioral loyalty, which reflects a consumer's habitual purchasing patterns over time, and attitudinal loyalty, which encompasses the spectrum of a consumer's loyalty, ranging from very loyal to not loyal at all (Kaur & Soch, 2018). According to Hurriyati (2010), there are several indicators used to measure customer loyalty, including making regular repeat purchases, purchasing across the entire product and service line, recommending the company to others when asked for advice, considering the company as the first choice when making service-related purchases.

Understanding consumer behavior is a complex psychological process involving the way consumers respond to marketing stimuli. Marketing efforts and environmental cues are triggers that can influence consumer awareness, initiating a multifaceted psychological process that culminates in the formation of purchase intentions (Kotler & Keller, 2016). In essence, consumer behavior encompasses the direct engagement of individuals or groups in activities such as planning, decision-making, search, purchase, acquisition, usage, disposal, and evaluation of a product, service, idea, or experience. These activities aim to satisfy needs or desires that lead to contentment (Munadie & Widodo, 2019). Furthermore, purchase intention is recognized as the key determinant that best anticipates customer behavior (Widodo & Maylina, 2022).

One of the pivotal factors influencing purchase intention is product features (Rakib M. R., Pramanik, Amran, Islam, & Sarker, 2022). According to Kotler & Armstrong (2018), a product feature represents an element of a product designed to fulfill consumers' varying needs and desires through ownership, utilization, and application. Being the first to introduce valuable new features to consumers is a highly effective competitive strategy (Kotler & Armstrong, 2018, p. 250). Product features, in conjunction with product quality and functionalities, can shape the adoption and usage of a product (Gu and Wei, 2020). Additionally, Wijayasari and Mahfudz (2018) highlight that product quality exerts a significant influence on purchase intention, with higher product quality corresponding to a more substantial impact. Arusetyo's enquiry (2018) supports this idea, demonstrating that consumer intention to purchase a product increases with its quality. This perspective aligns with Kristanto & Pudjop Dynastyo (2021), which suggests that product quality plays a role in influencing purchase intention.

Based on the results of previous studies, the present study posits hypotheses:

**H1:** Psychological positively affects purchase decision.
H2: Social environment positively affects purchase decision.
H3: Cultural affects purchase decision.
H4: Personal positively affects purchase decision.
H5: Economic positively affects purchase decision.
H6: Marketing strategy positively affects purchase decision.
H7: Marketing strategy positively affects consumer loyalty.
H8: Purchase decision positively affects consumer satisfaction.
H9: Purchase decision positively affects consumer loyalty.
H10: Consumer satisfaction positively affects consumer loyalty.

3 RESEARCH METHODS
3.1 DATA SOURCES

This research was conducted in Riau's Capital, which is one of the economically strategic cities in Riau Province, Indonesia with economic growth of 3.88 percent in 2023. It is one of the largest cities in Riau Province with a high population density with a population of 1.007.540 inhabitants (Indonesia Data, 2023).

To ensure the representation of respondents, a random sampling approach was adopted, targeting individuals at various shops and supermarkets situated in the major cities within the region. Employing a face-to-face survey technique and structured questionnaires, data were collected from a total of 100 participants who constituted the designated target group. These respondents shared insights into their behaviors, attitudes, and preferences concerning vegetables products within the local and modern market.

This study employs a quantitative investigation design and a structured questionnaire. The questionnaire consists of three parts containing statement questions adapted from previous examination. The first part of the questionnaire includes questions related to respondents' demographic characteristics, such as gender, age, education level, monthly income, and family status. The second part of the questionnaire focuses on consumer behavior factors, including psychological, social, cultural, personal, and economic factors, purchase decisions, marketing strategies, consumer satisfaction, and consumer loyalty.

All items for the variables under investigation use a 5-point Likert Scale, with a score of 1 for "strongly disagree" and a score of 5 for "strongly agree." The questionnaire was then pilot-tested with 30 consumers to ensure that the questions and answer format
were clear. Some minor adjustments were made based on the feedback received from the pilot study.

This enquiry employs a simple random sampling approach by taking 30% or 0.3 of the unlimited population as the sample. The confidence level used is 95%, and the allowable error rate is 5%, which is equivalent to 0.05. This confidence level is expressed as $Z_{0.05} = 1.96$. The questionnaire was only distributed to respondents who had knowledge of vegetables. Therefore, the total number of questionnaires distributed is 323.

Respondent samples were taken from two types of markets, traditional markets and modern markets, during the period from August 1st to August 30th, 2023, in Capital of Riau. Participation in this research is voluntary. Therefore, we assume that the sample we took includes vegetable consumers from various areas in Pekanbaru, with diverse cultures and backgrounds.

### 3.2 RESEARCH DESIGN

Principal component analysis is used in this study to combine extensive multilevel variables and identify the critical elements influencing vegetable consumer behavior. Utilizing multilevel structural equation modeling (MSEM), the correlations between the factors pertaining to vegetable consumer behavior are examined. As shown in Figure 2, the study also analyzes causality linkages using path diagrams to identify the most effective marketing tactics for the new retail model.

Figure 2. Research model framework

![Research Model Framework](image-url)
4 RESULT AND DISCUSSION

4.1 EMPIRICAL RESULTS

The data for this research was obtained through questionnaires related to the purchasing behavior of local and imported vegetable consumers in the city. The study analyzes the transformation of consumer buying behavior due to psychological, social, cultural, personal, and economic dimensions. It explores the relationships between variables such as consumer buying motives, purchase decisions, satisfaction, and loyalty, with a focus on determining the best marketing strategies.

The research extracted nine dimensions of variables using factor analysis. The reliability levels of each variable dimension (Cronbach’s alpha) were above 0.8. SEM analysis was conducted based on these nine variable dimensions, as shown in Table 1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological</td>
<td>PS1 consuming vegetables regularly is essential for maintaining overall health and well-being</td>
</tr>
<tr>
<td></td>
<td>PS2 the perception of vegetables as a crucial part of a healthy diet</td>
</tr>
<tr>
<td>Social</td>
<td>S1 = choose to consume vegetables based on the recommendations and preferences of family and friends</td>
</tr>
<tr>
<td></td>
<td>S2 = the availability and consumption habits of vegetables in social circle</td>
</tr>
<tr>
<td>Cultural</td>
<td>C1 = cultural background and traditions play a significant role in shaping preferences for specific types of vegetables</td>
</tr>
<tr>
<td></td>
<td>C2 = tend to select vegetables for consumption that align with the cultural cuisine and dietary customs grown up with</td>
</tr>
<tr>
<td>Personal</td>
<td>P1 = individual dietary preferences and taste preferences</td>
</tr>
<tr>
<td></td>
<td>P2 = the convenience and ease of preparation of vegetables</td>
</tr>
<tr>
<td>Economic</td>
<td>E1 = the cost of vegetables</td>
</tr>
<tr>
<td></td>
<td>E2 = more likely to choose vegetables that are on sale or offered at a discounted price</td>
</tr>
<tr>
<td>Purchase Decision</td>
<td>PD1 the cost of vegetables determining how often purchase and consume them</td>
</tr>
<tr>
<td></td>
<td>PD2 choose vegetables that are on sale or offered at a discounted price when grocery shopping</td>
</tr>
<tr>
<td>Marketing Strategy</td>
<td>MS1 the availability of a wide variety of vegetable options</td>
</tr>
<tr>
<td></td>
<td>MS2 pay more for quality, fresh vegetables</td>
</tr>
<tr>
<td></td>
<td>MS3 special promotions or bundled deals in the store</td>
</tr>
<tr>
<td></td>
<td>MS4 conveniently located and easily accessible</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>CS1 consumer satisfaction with vegetable quality</td>
</tr>
<tr>
<td></td>
<td>CS2 consumer satisfaction with overall vegetable consumption</td>
</tr>
<tr>
<td>Consumer Loyalty</td>
<td>CL1 continue purchasing preferred vegetables from the same source or brand in the future</td>
</tr>
<tr>
<td></td>
<td>CL2 recommend the vegetables to friends, family, or colleagues based on positive experiences</td>
</tr>
</tbody>
</table>

Source: Prepared by authors (2023).
The exploration sample included 100 consumers from various regions in the city. Due to different quarantine measures in each region, there were significant differences in consumer behavior among regional groups. Therefore, a cluster sampling survey method was used to conduct questionnaires on vegetable consumer behavior in the city, with a total of 100 valid questionnaires collected. A 5-point Likert scale was used for measurement in this study.

4.2 DESCRIPTIVE STATISTICS AND CORRELATION MATRIX ANALYSIS

<table>
<thead>
<tr>
<th>Item</th>
<th>M</th>
<th>SD1</th>
<th>SD2</th>
<th>Maximum Value Between Samples</th>
<th>Minimum Value Between Samples</th>
<th>Maximum Value Between Groups</th>
<th>Minimum Value Between Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS1</td>
<td>3.21</td>
<td>0.38</td>
<td>0.44</td>
<td>5</td>
<td>3</td>
<td>4.16</td>
<td>3.76</td>
</tr>
<tr>
<td>PS2</td>
<td>3.15</td>
<td>0.22</td>
<td>0.38</td>
<td>5</td>
<td>2</td>
<td>4.57</td>
<td>3.06</td>
</tr>
<tr>
<td>S1</td>
<td>3.67</td>
<td>0.32</td>
<td>0.31</td>
<td>5</td>
<td>3</td>
<td>3.96</td>
<td>2.66</td>
</tr>
<tr>
<td>S2</td>
<td>3.32</td>
<td>0.26</td>
<td>0.41</td>
<td>5</td>
<td>2</td>
<td>4.29</td>
<td>2.81</td>
</tr>
<tr>
<td>C1</td>
<td>3.87</td>
<td>0.35</td>
<td>0.34</td>
<td>5</td>
<td>2</td>
<td>4.33</td>
<td>3.43</td>
</tr>
<tr>
<td>C2</td>
<td>3.39</td>
<td>0.28</td>
<td>0.30</td>
<td>5</td>
<td>3</td>
<td>4.17</td>
<td>2.56</td>
</tr>
<tr>
<td>P1</td>
<td>3.58</td>
<td>0.22</td>
<td>0.42</td>
<td>5</td>
<td>3</td>
<td>3.67</td>
<td>3.54</td>
</tr>
<tr>
<td>P2</td>
<td>3.19</td>
<td>0.32</td>
<td>0.32</td>
<td>5</td>
<td>2</td>
<td>4.88</td>
<td>3.23</td>
</tr>
<tr>
<td>E1</td>
<td>3.81</td>
<td>0.36</td>
<td>0.41</td>
<td>5</td>
<td>3</td>
<td>4.27</td>
<td>3.05</td>
</tr>
<tr>
<td>E2</td>
<td>3.49</td>
<td>0.27</td>
<td>0.38</td>
<td>5</td>
<td>2</td>
<td>4.10</td>
<td>2.79</td>
</tr>
<tr>
<td>PD1</td>
<td>3.77</td>
<td>0.38</td>
<td>0.40</td>
<td>5</td>
<td>3</td>
<td>4.57</td>
<td>3.44</td>
</tr>
<tr>
<td>PD2</td>
<td>3.29</td>
<td>0.33</td>
<td>0.32</td>
<td>5</td>
<td>3</td>
<td>4.37</td>
<td>3.56</td>
</tr>
<tr>
<td>MS1</td>
<td>3.42</td>
<td>0.39</td>
<td>0.35</td>
<td>5</td>
<td>2</td>
<td>4.28</td>
<td>2.82</td>
</tr>
<tr>
<td>MS2</td>
<td>3.68</td>
<td>0.26</td>
<td>0.30</td>
<td>5</td>
<td>2</td>
<td>3.92</td>
<td>3.54</td>
</tr>
<tr>
<td>MS3</td>
<td>3.39</td>
<td>0.28</td>
<td>0.38</td>
<td>5</td>
<td>3</td>
<td>4.17</td>
<td>3.21</td>
</tr>
<tr>
<td>MS4</td>
<td>3.41</td>
<td>0.33</td>
<td>0.37</td>
<td>5</td>
<td>2</td>
<td>4.28</td>
<td>3.65</td>
</tr>
<tr>
<td>CS1</td>
<td>3.62</td>
<td>0.27</td>
<td>0.42</td>
<td>5</td>
<td>3</td>
<td>4.67</td>
<td>3.62</td>
</tr>
<tr>
<td>CS2</td>
<td>3.78</td>
<td>0.31</td>
<td>0.39</td>
<td>5</td>
<td>2</td>
<td>4.91</td>
<td>3.72</td>
</tr>
<tr>
<td>CL1</td>
<td>3.49</td>
<td>0.38</td>
<td>0.28</td>
<td>5</td>
<td>2</td>
<td>4.22</td>
<td>3.23</td>
</tr>
<tr>
<td>CL2</td>
<td>3.32</td>
<td>0.25</td>
<td>0.33</td>
<td>5</td>
<td>2</td>
<td>4.47</td>
<td>3.11</td>
</tr>
</tbody>
</table>

Source: Prepared by authors (2023).

M represents the mean of the independent variables, SD1 signifies the standard deviation calculated for 100 individual consumers, and SD2 represents the standard deviation computed by aggregating data from 6 markets.

For empirical analysis, this study uses Multilevel Structural Equation Modeling (MSEM). There are essentially two models in MSEM. The dimension variance model for measurement indicators is first established by the measurement model. After that, confirmatory factor analysis is used to evaluate the measurement indicators against one or more dominant variables in order to determine the terms of dimension variance. The second structural model (Table 2) investigates the route links between exogenous and
endogenous structural variables in a cause-and-effect manner [43]. The intrinsic structure of both models and the goodness of fit of the overall structural model are evaluated in this study using the goodness-of-fit index (DFI). To calculate the goodness-of-fit index, divide the total goodness-of-fit X2 value by the degrees of freedom (DF).

4.3 MEASUREMENT MODEL ANALYSIS

The goodness-of-fit measurement in this study aligns with the DFI criteria. The results of the goodness-of-fit for the measurement model are summarized in Table 3. Every measuring item in this study has standardized factor loadings larger than 0.5, and the absolute values of t exceed 1.96. This suggests that the measurement model is accurately reflected in the questionnaire items. As a result, this study's empirical findings show convergent validity.

<table>
<thead>
<tr>
<th>Goodness-of-Fit Index</th>
<th>Threshold Value</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio of X² to degrees of freedom (X²/DF)</td>
<td>≤3.00</td>
<td>2.24</td>
</tr>
<tr>
<td>Goodness-of-fit index (GFI)</td>
<td>≥0.80</td>
<td>0.92</td>
</tr>
<tr>
<td>Adjusted Goodness-of-fit index (AGFI)</td>
<td>≥0.80</td>
<td>0.98</td>
</tr>
<tr>
<td>Normed fit index (NFI)</td>
<td>≥0.90</td>
<td>0.94</td>
</tr>
<tr>
<td>Comparative fit index (CFI)</td>
<td>≥0.90</td>
<td>0.91</td>
</tr>
<tr>
<td>Root Mean Square Residual (RMSR)</td>
<td>≤0.05</td>
<td>0.034</td>
</tr>
</tbody>
</table>

Source: Prepared by authors (2023).

The findings demonstrate a high degree of correlation between the measurement indices and a high degree of reliability among the dimension indices, with the total reliability (CR) values of all dimensions being greater than 0.7. Each index variable can accurately reflect its corresponding dimension variable if the average variance extracted (AVE) is also more than 0.5. As a result, Table 4 indicates that the measurement model used in this investigation has good reproducibility.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Standardized Factor Loading</th>
<th>Standard Error (SE)</th>
<th>t Value</th>
<th>Composite Reliability (CR)</th>
<th>Average Variance Extracted (AVE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology</td>
<td>0.776</td>
<td>0.031</td>
<td>12.45</td>
<td>0.926</td>
<td>0.812</td>
</tr>
<tr>
<td>PS1</td>
<td>0.876</td>
<td>0.022</td>
<td>14.87</td>
<td>0.968</td>
<td>0.926</td>
</tr>
<tr>
<td>PS2</td>
<td>0.886</td>
<td>0.025</td>
<td>13.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>0.982</td>
<td>0.016</td>
<td>16.17</td>
<td>0.938</td>
<td>0.856</td>
</tr>
<tr>
<td>S2</td>
<td>0.809</td>
<td>0.023</td>
<td>12.09</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Construct reliability (CR) = (sum of standardized loading)² / [(sum of standardized loading)² + (sum of indicator measurement error)]. Indicator measurement error can be calculated as 1 – (standardized loading)². Average variance extracted (AVE) = (sum of squared standardized loadings)/ [(sum of squared standardized loadings) + (sum of indicator measurement error)].

4.4 PATH COEFFICIENT ANALYSIS

Based on the goodness-of-fit results of the structural model in this study, the data presented in Table 5 show that each goodness-of-fit index meets the required threshold, indicating that the structural model exhibits a good fit.

<table>
<thead>
<tr>
<th>Goodness-of-Fit Index</th>
<th>Threshold Value</th>
<th>Measured Value</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio of $X^2$ to degrees of freedom ($X^2$/DF)</td>
<td>≤3.00</td>
<td>2.46</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Goodness-of-fit index (GFI)</td>
<td>≥0.80</td>
<td>0.98</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Adjusted Goodness-of-fit index (AGFI)</td>
<td>≥0.80</td>
<td>0.94</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Normed fit index (NFI)</td>
<td>≥0.90</td>
<td>0.91</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Comparative fit index (CFI)</td>
<td>≥0.90</td>
<td>0.93</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Root Mean Square Residual (RMSR)</td>
<td>≤0.05</td>
<td>0.032</td>
<td>Acceptable</td>
</tr>
</tbody>
</table>

Source: Prepared by authors (2023).

Figure 2 displays the path estimation results from this study's empirical investigation. All path coefficient estimates are consistent with the predicted assumptions.
and significant, as shown by the route coefficients and significance in Figure 2. These results suggest that the ten hypotheses put out in this investigation are validated. The influence of the various dimensions on one another can be computed based on each path coefficient.

The economic factor has the most significant impact on purchase decisions. The coefficient value is 0.556, indicating that customers prioritize the economic value of vegetable products. Purchase intention is a product of consumer psychology and signifies the subjective likelihood that consumers are inclined to engage in a particular purchasing action (Li et al., 2021; Zhou et al., 2023). For many consumers, especially those with lower incomes, the affordability of vegetables plays a crucial role in purchase decisions. Economic conditions, employment status, and wages in Downtown Riau can significantly impact whether consumers can afford to buy vegetables regularly. During economic downturns or periods of inflation, consumers may cut back on non-essential expenses, which could include vegetables. One of the key economic factors affecting purchase decisions is personal income. Pekanbaru City, like any other city, has a diverse population with varying income levels. Consumers with higher incomes generally have more purchasing power and are less price-sensitive when buying vegetables. They may be
willing to pay a premium for higher-quality or organic vegetables, and their purchase decisions may be less influenced by price fluctuations. Economic factors can also affect the trade-off between quality and price. Consumers may be willing to pay more for fresh, locally sourced, or organic vegetables if their economic conditions permit. Conversely, during economic challenges, price considerations may take precedence over quality.

The cultural factor has a positive impact on purchase decisions. The coefficient value is 0.477, showing that customers pay considerable attention to cultural factors when consuming vegetables. This indicates that perceived traditional cultural symbols exert a notably positive influence on consumers' sense of traditional cultural identity and emotional values. Conversely, while it has a direct impact on purchase intention, this impact is not statistically significant. Greater consumer recognition of traditional cultural symbols corresponds to heightened cultural identity and emotional value. In the context of consumers, their cognitive processes, and their purchase inclinations, it's important to note that the influence of cultural symbols on consumers' purchase intentions doesn't necessarily hinge on their cultural identity, as is often observed in the acquisition of tourist souvenirs. When consumers purchase souvenirs, they are typically representing the distinctive cultural attributes of a region, with the primary emphasis being on the symbolic or cultural significance ascribed to these symbols (Trinh et al., 2014), rather than a deep identification with a specific regional culture. The authenticity and foreignness of travel-related products also play a crucial role in shaping consumers' purchase decisions (Li and Katsumata, 2020; Nusrat et al., 2021). The importance of price as a barrier to the purchase of organic products from unconventional production systems is confirmed by an increasing number of studies (Tandon, 2021).

The positive impact of the social factor on purchase decisions, as indicated by a coefficient value of 0.427, underscores the significance of social influences on consumers' vegetable purchasing behavior in Pekanbaru City. The social factor pertains to various social dynamics and interactions that shape consumer choices. This can encompass the influence of family, friends, peers, or societal norms regarding vegetable consumption. When this factor has a notable impact, it suggests that social relationships and external opinions play a vital role in driving consumers to make specific vegetable purchase decisions. For instance, consumers may be influenced by their social circles, with friends or family members recommending or endorsing certain vegetables or brands. Social gatherings, cultural traditions, or community practices can also promote the consumption
of specific vegetables, influencing consumers' choices. Additionally, societal trends and health-conscious movements might encourage individuals to align their purchases with prevailing social norms and values. The coefficient value of 0.427 highlights the importance of considering these social factors in marketing and promotional strategies within the vegetable market. Businesses can leverage social endorsements, testimonials, and community engagement to bolster their products' appeal and align with the preferences and behaviors of consumers in City. Recognizing the impact of social influences can aid in developing targeted campaigns that resonate with the local consumer base and ultimately drive purchase decisions.

Social factors refer to individuals who consistently engage in formal and informal social interactions and place a strong emphasis on equality in status or community rewards (Azis, 2018). These individuals have the capacity to shape an individual's behavior by influencing their actions based on established habits. Social factors are people who can influence individual behavior in carrying out an action based on habits. The results of this study are relevant to the study by (Puspita et al., 2017), which states that social factors influence purchasing decisions. (Fauzi et al., 2017; Heri and Taufiq, 2017; Veterinawati, 2013) also state that social factors have a significant impact on purchasing decisions. The positive impact of social factors on purchase decisions for vegetables in Pekanbaru city suggests that social influences play a significant role in shaping consumer behavior regarding vegetable purchases. Social factors encompass various elements such as family, friends, and peers. In Pekanbaru city, it appears that these social influences have a favorable effect on consumers' decisions to buy vegetables. This may imply that individuals are influenced by the preferences and behaviors of those in their social circles. In some cases, societal norms and expectations may encourage vegetable consumption. If consuming vegetables is considered a socially desirable behavior in Pekanbaru, individuals may be more likely to make purchase decisions aligning with these norms.

The substantial positive impact of the psychological factor on purchase decisions, represented by a high coefficient value of 0.844, highlights the significant role that consumer psychology plays in influencing vegetable purchasing behavior in Pekanbaru, the city of palm oil. The psychological factor encompasses various aspects of consumer mindset and emotions related to vegetable consumption. This can include perceptions, attitudes, beliefs, and emotional associations with vegetables. When this factor has a strong influence, it indicates that consumers in Pekanbaru City are highly responsive to
psychological triggers when making decisions about purchasing vegetables. For example, positive perceptions about the health benefits of vegetables, such as their role in maintaining overall well-being, might motivate consumers to prioritize vegetables in their shopping. Emotional factors, such as the enjoyment of cooking with fresh produce or the satisfaction derived from consuming nutritious meals, can also drive purchase decisions. Additionally, attitudes and beliefs about the quality, safety, and origin of vegetables can significantly impact consumer choices. The coefficient value of 0.844 suggests that businesses and marketers in the vegetable industry should focus on tapping into these psychological aspects. Strategies that emphasize the health benefits, freshness, and positive emotional experiences associated with vegetables are likely to resonate with consumers in Pekanbaru City and encourage them to make more vegetable-related purchases. It's essential to understand and leverage these psychological factors to effectively influence consumer behavior and drive sales in the vegetable market.

The positive impact of the personal factor on purchase decisions, as indicated by a coefficient value of 0.325, reflects the importance of individual characteristics and preferences in influencing consumer behavior within the vegetable market in Pekanbaru City. The personal factor encompasses various individual-level elements, such as lifestyle, taste preferences, health consciousness, and dietary choices. In the context of vegetables, consumers' personal preferences, dietary restrictions, and health-related considerations play a pivotal role in their purchase decisions. For instance, individuals who prioritize health and nutrition are more likely to purchase a wider variety of vegetables and may opt for organic or locally sourced produce. On the other hand, those with specific dietary preferences, such as vegetarians or vegans, may have distinct purchasing patterns centered on plant-based options.

Moreover, consumers' personal habits and routines also impact their vegetable consumption. For example, individuals who cook at home regularly might have a consistent demand for fresh vegetables, while those with busy lifestyles may opt for pre-cut or convenience-oriented vegetable products. The coefficient value of 0.325 suggests that these personal factors have a notable influence on purchase decisions. To effectively cater to the diverse personal preferences and needs of consumers in Pekanbaru City's vegetable market, businesses should consider offering a wide range of products, promoting health benefits, and accommodating different dietary choices and lifestyles.
Understanding and responding to consumers’ personal factors can enhance their satisfaction and loyalty, ultimately benefiting vegetable retailers and suppliers.

The empirical results indicating a positive impact of marketing strategy variables on purchase decisions (coefficient value of 0.521) and consumer loyalty (coefficient value of 0.327) suggest the effectiveness of strategic marketing efforts in influencing consumer behavior in Pekanbaru City's vegetable market. This finding aligns with the fundamental role of marketing strategies in shaping consumer perceptions, preferences, and behaviors. The positive influence of marketing strategies on purchase decisions signifies that well-designed marketing campaigns, promotions, and product positioning can motivate consumers to choose specific vegetables. These strategies may include effective advertising, highlighting the nutritional benefits of vegetables, offering promotions or discounts, and creating appealing packaging or branding. When consumers perceive value or uniqueness in a vegetable product due to marketing efforts, they are more likely to make a purchase decision in favor of that product.

Moreover, the positive impact of marketing strategy variables on consumer loyalty underscores the significance of building and maintaining strong customer relationships. Effective marketing strategies that focus on customer satisfaction, engagement, and trust can foster loyalty among vegetable consumers. This loyalty may translate into repeat purchases, word-of-mouth recommendations, and long-term brand preference. In Pekanbaru City's vegetable market, businesses that invest in strategic marketing and customer-centric approaches can cultivate a loyal customer base and drive sustainable success. The positive impact of marketing strategy variables on purchase decisions and consumer loyalty underscores the importance of strategic marketing efforts in influencing consumer behavior and fostering customer loyalty in the vegetable market of Pekanbaru City. Businesses that effectively employ marketing strategies are likely to attract and retain customers, contributing to their growth and competitiveness in the marketplace. Purchase decision variables have a positive impact on consumer satisfaction, with a coefficient value of 0.413, and consumer loyalty with a coefficient value of 0.562.

The empirical finding that consumer satisfaction variables have a positive impact on consumer loyalty (with a coefficient value of 0.414) highlights the intrinsic connection between these two crucial aspects of consumer behavior. This relationship signifies the significance of ensuring customer satisfaction as a means to cultivate and sustain
consumer loyalty, especially in the context of the vegetable market in Pekanbaru City. Consumer satisfaction is a pivotal determinant of consumer loyalty. When customers are satisfied with their vegetable purchasing experiences, including factors like product quality, pricing, service, and overall shopping experience, they are more likely to develop a sense of trust and attachment to the brand or seller. This positive perception leads to repeat purchases and a higher likelihood of recommending the product or brand to others. In the context of vegetable preferences, consumers who consistently find satisfaction in their choices are more inclined to remain loyal to specific brands, sources, or types of vegetables. In Pekanbaru City's vegetable market, businesses should prioritize customer satisfaction by addressing consumer needs and expectations. Strategies such as providing fresh and high-quality vegetables, offering competitive prices, ensuring excellent customer service, and actively seeking feedback can enhance satisfaction levels. As the empirical results indicate, this focus on customer satisfaction can, in turn, foster consumer loyalty, contributing to long-term success and market competitiveness. Ultimately, businesses that prioritize consumer satisfaction are more likely to enjoy repeat business and positive word-of-mouth referrals, enhancing their position in the vegetable market.

The economic factor emerges as the most influential dimension, emphasizing customers' prioritization of the economic value of vegetable products. Economic conditions, personal income, and affordability play pivotal roles in purchase decisions, especially for consumers with lower incomes. Economic factors can also influence the trade-off between quality and price in the context of vegetable purchases. The cultural factor positively impacts purchase decisions, indicating consumers' attention to cultural elements when consuming vegetables. Traditional cultural symbols influence consumers' cultural identity and emotional values, indirectly affecting purchase intentions. However, cultural symbols' direct impact on purchase intentions is not statistically significant, highlighting a nuanced relationship.

5 CONCLUSION

The social factor significantly influences purchase decisions, underlining the role of social influences in shaping vegetable purchasing behavior. Social dynamics, including recommendations from family, friends, and societal norms, play a vital role in driving specific vegetable purchase decisions. The psychological factor exerts a substantial positive influence on purchase decisions, signifying the role of consumer psychology in
shaping vegetable consumption behavior. Positive perceptions, emotional associations, and attitudes towards vegetables impact purchase decisions significantly. The personal factor reflects the importance of individual characteristics, preferences, and lifestyles in influencing purchase decisions. Consumers' dietary choices, health consciousness, and personal habits play pivotal roles in their vegetable purchasing behavior.

Furthermore, the study indicates that effective marketing strategies have a positive impact on purchase decisions and consumer loyalty. Well-designed marketing campaigns, promotions, and branding efforts can motivate consumers to choose specific vegetables and foster loyalty, highlighting the importance of strategic marketing in the vegetable market of Pekanbaru City. Additionally, the study emphasizes the intrinsic connection between consumer satisfaction and loyalty, emphasizing the significance of addressing consumer needs and expectations to cultivate and sustain loyalty in the vegetable market. Businesses that prioritize customer satisfaction are likely to enjoy repeat business and positive word-of-mouth referrals, enhancing their position in the market.

LIMITATIONS AND FUTURE RESEARCH

The limitations of this study include the fact that empirical analysis was only conducted on a portion of vegetable consumers who shop at traditional and modern markets in the city of Pekanbaru. The sample size limitations restrict the ability to analyze consumer behavior in more markets within the region. There is particular concern regarding the variation in consumption behavior between first-tier and second-tier cities in the province of Riau, which may be influenced by geographical factors. Therefore, the findings of this study may not encompass all aspects of vegetable consumer behavior in a broader region.

Another limitation of this examination is related to the data collection method. The study relies solely on self-reported data from consumer surveys. This method may introduce response bias or inaccuracies due to respondents' subjectivity, memory recall issues, or social desirability bias. Additionally, the cross-sectional nature of the data collection limits the ability to establish causality or track changes in consumer behavior over time. Future examination could benefit from incorporating more objective measures or longitudinal data to address these limitations.
Vegetable products are currently being sold by a number of e-commerce businesses in Pekanbaru. Stores selling fresh vegetables offer a variety of delivery options, such as drop-box pickup, in-store pickup plus home delivery, home delivery, group purchases, and others. The various business strategies employed by online retailers of fresh vegetable goods meet the wide range of customer demands. We propose that e-commerce businesses offering fresh vegetable products in Pekanbaru should investigate sustainable development economic models in addition to keeping an eye on customer satisfaction and loyalty. In particular, e-commerce for fresh vegetable products has not been extensively adopted on the internet. So, it makes sense to look into how to develop branded, highly distinctive vegetable products under a new agricultural value chain in order to attain respectable gross profit margins.
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