CARPATHIAN JOURNAL OF FOOD SCIENCE AND TECHNOLOGY

journal homepage: **http://chimie-biologie.ubm.ro/carpathian_journal/index.html**

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Research article

EXAMINING CONSUMER PURCHASE INTENTION FOR BANANA AND TARO CHIPS THROUGH THE THEORY OF PLANNED BEHAVIOR AND MARKETING MIX

Domingo, Cyril John A.[1✉], Torreda, Jose Amado Ds.[1,4], Canabuan, Cheene Rose[1], Besa, Adonis S.[3], Valerio, Jena Mae[1], Pahunar, Realyn[1], Wawa, Sheilu Amor[1], Maghanoy, Charlie[1], Tampus, Doreen[1], Carnazo, Mary Joy[1], Ancheta, Charmie[2]

[1]College of Industrial Technology, Sultan Kudarat State University, Kalawag II, Isulan, Sultan Kudarat 9805, Philippines

[2]College of Business Administration and Hospitality Management, Sultan Kudarat State University, Tacurong City, Sultan Kudarat 9800, Philippines

[3]College of Teacher Education, Sultan Kudarat State University, Tacurong City, Sultan Kudarat 9800, Philippines

[4]Department of Science and Technology - Science Education Institute, Taguig 1631, Philippines

[✉]Corresponding Author: Domingo, Cyril John A.ORCID: 0000-0001-5693-8442

E-mail: cyriljohndomingo@sksu.edu.ph

https://doi.org/10.34302/crpjfst/BKFA5207

Article history:
Received:
October 13th, 2025
Accepted:
August 15th, 2026
Published
November 23th, 2026

Keywords:
Purchase intention;
Consumer behavior;
Marketing models;
Sustainable marketing strategy;
Social influence;
Structural equation modelling.

ABSTRACT

This study examines the psychological and marketing determinants of Filipino consumers' purchase intention toward Bungulan banana and taro chips, locally innovated, functional snacks with sustainability potential. Employing structural equation modeling and 5,000-sample bias-corrected bootstrapping, the analysis confirms measurement validity and tests hypothesized relationships within an integrated Theory of Planned Behavior (TPB) and marketing mix framework. Results reveal that attitude ($\beta = -0.020$, $p = 0.671$) and perceived behavioral control ($\beta = -0.027$, $p = 0.766$) did not significantly influence purchase intention, whereas subjective norms ($\beta = 0.522$, $p < 0.001$) played a decisive predictive role. Marketing mix strategies, encompassing product quality, pricing, accessibility, and promotion were found to significantly enhance purchase intention ($\beta = 0.294$, $p = 0.001$) and also to strengthen attitudes, perceived social influence, and behavioral control. The final model explained 48% of the variance in purchase intention and exhibited acceptable predictive relevance (positive Q^2 index), overall effect size (R^2), and absence of common method bias (VIF < 3.3). These findings emphasize the primacy of social approval and integrated marketing efforts over individual attitudes in driving demand for sustainable snack innovations in emerging markets. Practical

implications underscore the value of community outreach, strategic promotions, affordable pricing, and digital engagement for SMEs and agribusinesses seeking to advance healthy, eco-friendly food choices.

1. Introduction

Consumers' behaviors and lifestyles have evolved substantially alongside rapid technological advancements, fostering a growing preference for healthy, organic, locally sourced, minimally processed, and short-supply-chain products. This trend reflects an increasing consumer awareness of the environmental, social, and economic impact of their food choices, contributing meaningfully to the development of sustainable agri-food systems (Scozzafava, Mauracher, & Gerini, 2022). Uliano et al. (2024) further highlight that willingness to pay a premium for sustainable and functional snacks is especially pronounced among women, health-conscious consumers, and younger generations.

With this landscape, the Philippines stands out as a key market where banana and taro chips function not only as popular everyday snacks but as vehicles for sustainable agribusiness and rural economic development. Organically grown in the highlands of Lake Sebu, Mindanao, these crops contribute to the livelihoods of smallholder farmers, support women-led enterprises, and play a critical role in local economies. The process of transforming raw crops into chips adds significant value, increasing farmer income and driving inclusive economic growth.

Despite their cultural familiarity and market presence, little empirical evidence exists regarding the psychological and marketing drivers that influence Filipino consumers' purchase intentions for these locally innovated snacks. Previous studies have begun to illuminate relevant factors: For example, Randall et al. (2023) identified cultural differences in sustainable food consumption motives using the theory of planned behavior, with health and environmental concerns most prominent in Non-Western cultures and personal norms prioritized in Western cultures. Hojjati et al. (2025) showed that attitudes, norms, risk perception, health consciousness, and self-identity all shape intentions for industrial dairy, with health consciousness strongest. Farid et al. (2023) found that the theory of planned behavior and marketing mix (4Ps) robustly predict dairy purchase intention in Bangladesh, Suyanto and Dewi (2023) found that product, price, access, and especially price promotions boost purchase intention and purchase, with these effects shaped by age, income, and culture, Dangelico et al. (2024) extended the theory of planned behavior with product familiarity and perceived value, Zayed et al. (2022) documented the influence of psychological and marketing factors on organic food choices in developing countries, Wulandari et al. (2023) reported that product, price, and place influence satisfaction with banana chips, while weak promotion remains a challenge and Kurniawati et al. (2023) reviewed offline and online TPB effects in Asia. Collectively, these literatures consistently point to the interplay between psychological factors such as attitudes, perceived social norms, and behavioral control (Theory of Planned Behavior) and marketing mix elements (product quality, price, place, and promotion, known as the 4Ps) in shaping consumer behavior. Yet, there remains a clear gap in research that contextualizes how these determinants operate specifically for indigenous, organic banana and root crop–based snacks in the Philippines.

To address the gap, the current study adopts an integrated framework that combines the Theory of Planned Behavior (TPB) and the Marketing Mix to examine the purchase intentions for banana and taro chips in the Philippines. Therefore, this study proposes the following hypotheses:

H1: Attitude shows a positive relationship with purchase intention of banana/taro chip products.

H2: Subjective norms are associated with the purchasing behavior of banana/taro chip products.

H3: Perceived behavioral control is associated with the decision to buy banana/taro chip products.

H4: The marketing mix is associated with purchasing intention of banana/taro chip products.

H5: The marketing mix is related to attitude toward behavior.H6: The marketing mix is related to subjective norms.

H7: The marketing mix is related to perceived behavioral control.

Through testing these hypotheses, the study seeks not only to advance theoretical understanding of sustainable consumer behavior but also to provide practical guidance for small and micro enterprises (SMEs) and agribusiness champions aiming to strengthen the competitiveness, marketability, and social value of the banana and taro chip sector in the Philippines and similar markets.

2. Materials and methods

2.1. Sample and Sampling Technique

The survey was conducted in SOCCSKSARGEN, Philippines, in 2024, covering multiple provinces in the region. The total population of SOCCSKSARGEN was 4,901,486 (Philippine Statistics Authority, 2020). To define the potential market for banana and taro chips, this study considered demographics that typically consume snack foods (ages 10–64) and national dietary survey data. According to the 2018 FNRI National Nutrition Survey, about 80% of Filipinos aged 10 years and above consume snack foods regularly, with 25–30% reporting that they consume locally processed snacks such as banana or root crop chips either occasionally or frequently. Based on these figures, the estimated potential market size for banana and taro chips in SOCCSKSARGEN was approximately 882,000 consumers.

The target population of this study included individuals aged 18 years and above who purchase snack chips. Following Krejcie and Morgan's (1970) sampling formula, the minimum required sample size for a population of this scale at 95% confidence level and ±5% margin of error was 383. A total of 394 responses were collected, thereby meeting and slightly exceeding the sample requirement. Convenience sampling was employed, with respondents recruited both online (via Google Forms shared on social media) and offline (at markets, sari-sari stores, supermarkets, and schools). All responses were screened for completeness, and all 394 valid questionnaires were used for further analysis.

2.2. Questionnaire Design

The questionnaire used in this study was adopted and modified from Farid et al. (2023), who applied the Theory of Planned Behavior (TPB) and marketing mix framework to assess consumer purchase intention for dairy products in Bangladesh. Items were adapted to reflect the local context of Bungulan banana and taro chips. The instrument comprised four sections.

The first section introduced the study objectives, obtained informed consent, and assured respondents of confidentiality and voluntary participation. The second section captured chip-purchasing behavior, including purchase purpose (e.g., self, family, friends), buying channels, purchase frequency, and purchase-influencing factors. The third section measured constructs of the TPB (attitude, subjective norms, perceived behavioral control, purchase intention) and the marketing mix (product, price, place, promotion) using multi-item Likert scales (1 = strongly disagree to 7 = strongly agree). The final section collected socio-demographic information, including gender, age, education, marital status, employment, and income.

2.3. Data analysis

Descriptive and multivariate analyses were applied to the data. Descriptive statistics summarized respondents' demographics and purchasing behavior. Partial least squares structural equation modeling (PLS-SEM) was applied using SmartPLS 4.0 to test both the measurement and structural models, following the guidelines of Hair & Alamer (2022).

2.4. Reliability and Validity Assessment

Construct reliability was assessed using Cronbach's alpha (α), composite reliability (CR), and average variance extracted (AVE). Acceptable thresholds were $\alpha \geq 0.7$, $CR \geq 0.7$, and $AVE \geq 0.5$. Discriminant validity was evaluated using heterotrait-monotrait (HTMT) ratios, with values < 0.85 indicating satisfactory discriminant validity (Hair et al., 2019).

2.5. Structural Equation Modeling

The structural model was tested through bootstrapping with 5,000 resamples at a 95% confidence interval. Path coefficients (β), t-values, and p-values were used to evaluate hypotheses, while effect sizes (f^2) were interpreted using Cohen's (1988) guidelines. Predictive relevance was tested using Stone–Geisser's Q^2, while R^2 values assessed explained variance. Multicollinearity was checked through variance inflation factors (VIF), all of which were < 3.3, indicating no collinearity problems (Kock, 2015).

3. Results and Discussions

3.1. Demographic Profile of the Respondents

Table 1 summarizes the socio-demographic characteristics of the respondents. Out of 394 participants, females comprised the majority (68.0%) compared to males (26.1%) and those who preferred not to disclose (5.8%). Most respondents were 18–24 years old (71.3%), followed by 25–54 years (27.7%), with only a small proportion aged 55–64 years (1.0%). In terms of education, the majority were college or university students (74.4%), while 16.5% had postgraduate qualifications and 9.1% reported high school education. Regarding marital status, the majority were single (83.2%), followed by married (15.5%), while less than 1% were widowed. Employment status revealed that students dominated the sample (65.5%), followed by employees (22.6%), with smaller proportions of unemployed (8.4%), self-employed (3.0%), and retired (0.5%). In terms of monthly income, nearly half of the respondents (48.7%) earned less than PHP 5,000, while 19.0% reported having no income. Others reported higher income brackets, with 13.2% earning PHP 5,000–25,000, 13.5% earning PHP 25,000–45,000, 3.8% earning PHP 45,000–75,000, and only 1.8% reporting more than PHP 75,000.

Table 1. Socio-demographic characteristics of the respondents

Characteristic		Frequency	Percentage
Gender			
	Female	268	68.0%
	Male	103	26.1%
	Prefer not to say	23	5.8%
Age			
	18 to 24 Years	281	71.3%
	25 to 54 Years	109	27.7%
	55 to 64 Years	4	1.0%
Education			
	High school	36	9.1%
	College/University	293	74.4%
	Post Graduate	65	16.5%
Marital Status			
	No comment	2	0.5%

	Single	328	83.2%
	Married	61	15.5%
	Widowed	3	0.8%
Working Status			
	Student	258	65.5%
	Unemployed	33	8.4%
	Self-employed	12	3.0%
	Employee	89	22.6%
	Retired	2	0.5%
Income			
	None	75	19.0%
	< PHP 5,000	192	48.7%
	PHP 5,000- 25,000	52	13.2%
	PHP 25,000- 45,000	53	13.5%
	PHP 45,000- 75,000	15	3.8%
	> PHP 75,000	7	1.8%

n = 394

3.2. Data Diagnostics and Assumptions

3.2.1. Descriptive Statistics and Inter-Correlations of Constructs

Table 2 presents descriptive statistics for the study variables, including measures of central tendency such as means (M) and standard deviations (SD), as well as bivariate correlations. Assessment of normality is also reported which was violated as skewness and kurtosis values surpassed even the lenient criterion i.e., +2 (George & Mallery, 2010). Thus, nonparametric structural equation modelling was adopted for analysis i.e., partial least square (PLS-SEM; Hair, Black, Babin & Anderson, 2019).

Table 2. Descriptive and Correlational Statistics

Variable	Mean	SD	Skewness	Kurtosis	MM	ATT	SN	PBC	PI
MM	6.04	0.68	-3.23	20.54	1				
ATT	5.42	1.26	-0.69	0.23	.166**				
SN	5.10	1.30	-0.61	-0.10	.445**	.177**	1		
PBC	4.43	0.94	0.04	0.38	.166**	.338**	-0.001	1	
PI	5.28	1.14	-0.95	1.40	.523**	.107*	.656**	.001	1

*n = 394, SD = standard deviation, **p < .01, *p < .05*

Table 3. Discriminant Validity of the Measurement Model – HTMT Ratios

	HTMT								
	ATT	MM	PBC	PI	PLC	PRC	PROD	PROM	SN
Attitude ATT	-								
Marketing Mix MM	0.20	-							
PBC	0.38	0.24	-						
PI	0.14	0.56	0.16	-					
PLC	0.23	0.95	0.25	0.44	-				
PRC	0.12	0.88	0.16	0.63	0.64	-			

PROD	0.19	0.94	0.26	0.41	0.78	0.55	-		
PROM	0.12	0.87	0.11	0.48	0.66	0.64	0.62	-	
SN	0.21	0.49	0.15	0.73	0.36	0.54	0.34	0.49	-

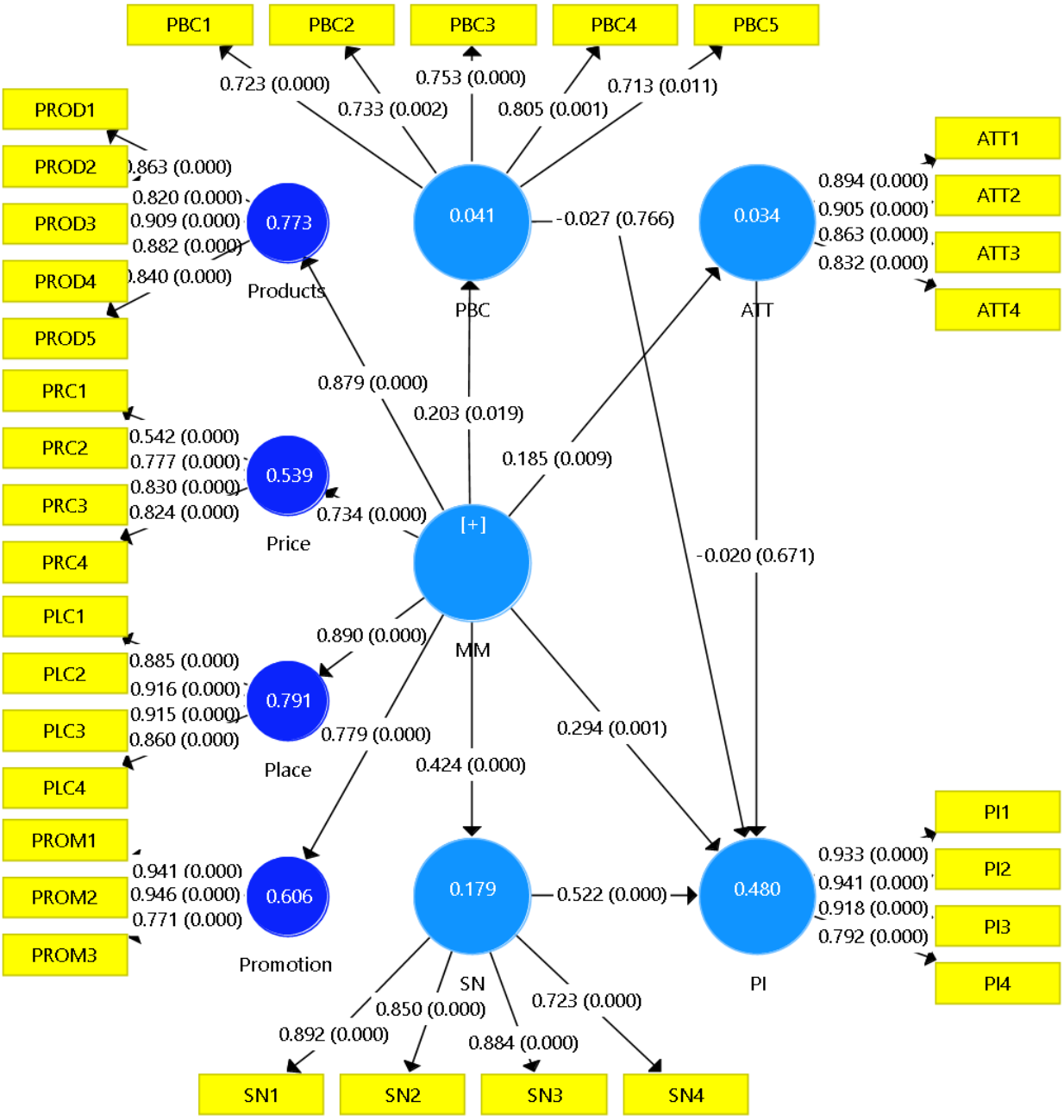

Figure 1. SEM Model

3.2.2. Assessment of Measurement Model

SmartPLS software was utilized to evaluate the reliability and validity of the measurement model. Consistent with the recommendations of Sarstedt, Ringle, and Hair (2019), a Type-I Reflective-Reflective lower and higher order constructs (LOC & HOC) model were deemed appropriate for this study along with repeated indicator approach to measure the (Becker, Klein, & Wetzels, 2012).

Subsequently, five HOCs (Attitude or ATT, Marketing Mix or MM, Perceived Behavioral

Control or PBC, Purchase Intention or PI, Subjective Norm or SN) and four LOCs (Place or PLC, Price or PRC, Product or PROD & Promotion or PROM) produced a well fitted measurement model (see Figure 1) based on the criterions like factor loadings which were > 0.5, Cronbach alpha was > 0.7, composite reliability was > 0.7, convergent validity / average variance extracted was > 0.5, predictive capability values (H2) for all variable were also positive (Hair et al., 2019), whereas discriminant validity / HTMT ratios were < 0.85 except the HTMT for HOCs with their own LOCs, which is not required (Kocyigit & Ringle, 2011), see Table 3.

3.3. Assessment of Structural Model

Upon successful assessment of the reliability and validity of the measurement model, this study implemented the structural equation modelling (Figure 1) by utilizing 5000 samples of bias corrected bootstrapping with 95 confidence intervals to test the hypotheses. The results are summarized in Figure 1 and Table 4. Hypotheses were evaluated based on the standardized estimates.

For H1, results revealed that attitude (ATT) had a negative and nonsignificant relationship with purchase intention (PI) ($\beta = –0.020$, $p = 0.671$), indicating that H1 was not supported. This suggests that consumers' personal evaluations toward banana and taro chips did not translate into purchase intention. For H2, the findings showed that subjective norms (SN) had a strong positive and significant effect on PI ($\beta = 0.522$, $p < 0.001$), supporting the hypothesis. This indicates that social influence plays a decisive role in shaping consumer intentions for these locally innovated snack products. In the case of H3, perceived behavioral control (PBC) was found to have a negative and nonsignificant impact on PI ($\beta = –0.027$, $p = 0.766$). Thus, H3 was not supported, implying that consumers' perceived ability or ease of purchasing did not significantly affect their intention to buy.

Table 4. Reliability and Validity Analysis

Variable	CA	CR	AVE	H^2
Attitude ATT	0.90	0.93	0.76	0.59
Marketing Mix MM	0.93	0.94	0.50	0.43
PBC	0.81	0.86	0.55	0.33
PI	0.92	0.94	0.81	0.66
PLC	0.92	0.94	0.80	0.64
PRC	0.74	0.84	0.57	0.30
PROD	0.91	0.94	0.74	0.60
PROM	0.86	0.92	0.79	0.57
SN	0.86	0.91	0.71	0.51

The remaining hypotheses examined the influence of the marketing mix (MM). Findings demonstrated that MM had a positive and significant effect on PI ($\beta = 0.294$, $p = 0.001$), thereby supporting H4. In addition, MM was found to positively influence ATT ($\beta = 0.185$, $p = 0.009$), providing support for H5. Likewise, MM significantly shaped SN ($\beta = 0.424$, $p < 0.001$), supporting H6, and had a positive impact on PBC ($\beta = 0.203$, $p = 0.019$), supporting H7. These results highlight that marketing mix strategies—product, price, place, and promotion—exerted a decisive role not only in strengthening consumers' intention to purchase but also in shaping their attitudes, perceived social influence, and control over behavior.

3.4. Quality Features of the Structural Models

To ensure that structural models produced results meeting the essential quality criterions, this study consulted the predictive relevance including the cross-validated redundancy index (CVRI: Stone-Geisser's Q^2), R^2 and VIF (Tenenhaus, Vinzi, Chatelin, & Lauro, 2005). As mentioned in Table 6 that outcome variables had positive Q^2 value thus confirming the compliance with this quality criteria. R^2 measures the overall effect size, so in this study 3.4% of ATT, 4.1% of PBC and 17.9% of SN was explained by MM. While 48% of PI was explained by ATT, SN, PBC and MM jointly. Finally, the presence of multicollinearity was also ruled out as the VIF values were < 3.3, such low VIF values are also suggest that there wasn't any evidence of pathological contamination or even it hints at the absence of common method bias as per the guidelines of (Kock, 2015).

Table 5. Hypothesis Testing Results

Path	Estimate	T	P	F^2	Status
ATT → PI	-0.020	0.426	0.671	0.001	H1: Not Supported
SN → PI	0.522	9.492	0.000	0.415	H2: Supported
PBC → PI	-0.027	0.298	0.766	0.001	H3: Not Supported
MM → PI	0.294	3.386	0.001	0.132	H4: Supported
MM → ATT	0.185	2.630	0.009	0.035	H5: Supported
MM → SN	0.424	5.730	0.000	0.219	H6: Supported
MM → PBC	0.203	2.358	0.019	0.043	H7: Supported

Table 6. Quality Features of Structural Models

Outcome Variable	Q Squared (Q^2)	R Squared (R^2)	VIF
ATT	0.022	0.034	1.000
PBC	0.017	0.041	1.000
PI	0.376	0.480	1.277
SN	0.125	0.179	1.000

3.5. Discussion

This study examined the factors influencing Filipino consumers' purchase intention of Bungulan banana and taro chips using the Theory of Planned Behavior (TPB) integrated with the marketing mix. The first hypothesis tested the effect of attitude (ATT) on purchase intention (PI). Results revealed that attitude had a negative and nonsignificant impact, indicating that consumers' personal evaluations of banana and taro chips were insufficient to drive their intention to purchase. This finding contradicts the TPB assumption (Ajzen, 1991) and the study of Farid et al. (2023), which reported a strong positive association between attitude and dairy product purchasing in Bangladesh. Instead, it aligns with Hasan and Erni (2023), who found that attitude did not directly predict purchase intention in direct marketing in Indonesia, and Nguyen et al. (2019), who observed that attitude was not always a reliable predictor in online food purchasing in Vietnam due to external constraints such as risk perception and trust. Similarly, Zayed et al. (2022) reported that attitudes toward organic food did not significantly affect purchase intention in Egypt . These converging findings suggest that for novel products like Bungulan banana and taro chips, attitude alone may be insufficient, as consumers rely more on trust, familiarity, and market cues in their decision-making.

The second hypothesis assessed the relationship between subjective norms (SN) and purchase intention. Findings revealed that subjective norms had a positive and significant

influence on intention, suggesting that peer pressure, family recommendations, and community approval play a decisive role in encouraging consumers to adopt banana and taro chips. This result diverges from Farid et al. (2023), who found subjective norms to be nonsignificant in the context of dairy products in Bangladesh, but it is consistent with consistent with TPB applications in collectivist cultures where family, peers, and community opinions sway individual choices (Randall, et al., 2024; Nguyen, et al., 2019), who demonstrated that normative beliefs strongly predicted online food purchases in Vietnam. These findings emphasize that in collectivist cultures such as the Philippines, consumer decisions are often guided more by social endorsement than by individual attitudes.

The third hypothesis tested perceived behavioral control (PBC) as a determinant of purchase intention. Results showed that PBC had a negative and nonsignificant impact, implying that consumers' perceived ability to access or afford the product did not directly shape their intention to buy. This finding is consistent with Farid et al. (2023), who reported a nonsignificant effect of PBC on dairy product purchase intention, as well as Zayed et al. (2022), who found similar results for organic food in Egypt. Maharani and Syah (2024) also reported that PBC was not a significant predictor in the case of premium coffee in Jakarta (Yusuf & Zulfitri, 2021). These studies suggest that in emerging markets, external factors such as availability, price, and consumer trust often outweigh perceived control in shaping purchase intention.

The remaining hypotheses (H4–H7) examined the influence of the marketing mix (MM) on purchase intention and the TPB constructs. Results revealed that the marketing mix had a positive and significant impact on PI, ATT, SN, and PBC, with effect sizes ranging from small to moderate. These findings highlight that the 4Ps (product, price, place, and promotion) not only directly shape consumer intention but also indirectly strengthen it by fostering positive attitudes, reinforcing social influence, and enhancing perceived control. This is consistent with Farid et al. (2023), who found that the marketing mix was a critical determinant of dairy product purchasing in Bangladesh, and with Maharani and Syah (2024), who reported similar effects in the premium coffee sector. Supporting this, Nguyen et al. (2019) emphasized that marketing strategies in emerging markets often create stronger normative and control influences than attitudes alone. Specifically, product quality and novelty enhance consumer evaluations, competitive pricing determines accessibility, effective promotions generate awareness and social endorsement, and reliable distribution ensures product availability.

The remaining hypotheses (H4–H7) examined the influence of the marketing mix (MM) on purchase intention and the TPB constructs. Results revealed that the marketing mix had a positive and significant impact on PI, ATT, SN, and PBC, with effect sizes ranging from small to moderate. The marketing mix (product, price, place, promotion) played a dual role: not only did it directly increase intention to purchase, but it also amplified attitudes, strengthened social influence, and improved perceived behavioral control. This is substantiated by Farid et al. (2023), who recognized the critical role of the 4Ps for dairy product adoption in Bangladesh, and Suyanto & Dewi (2023), who emphasized the influence of product features, price fairness, channel accessibility, and especially price promotions in Indonesia. Dangelico et al. (2024) also highlight the importance of perceived value and product familiarity as part of the marketing mix extensions to TPB, and Wulandari et al. (2023) demonstrate that tangible investments in product, pricing, and accessibility are key to consumer satisfaction for banana chips, whereas underinvestment in promotion remains a barrier.

For Filipino SMEs and agribusinesses, the results of this study underscores the need to focus on credible marketing communications, community engagement, accessible distribution, and tailored promotions to build both trust and enthusiasm for innovative, locally rooted snacks.

4. Conclusions

The banana and root crop chips industry presents substantial potential for inclusive economic advancement in the Philippines, particularly in regions like SOCCSKSARGEN with abundant agricultural resources. Although consumer research on snack products is well established, this study is the first to systematically apply an integrated Theory of Planned Behavior (TPB) and marketing mix framework to the context of banana and taro chips. Using structural equation modeling, the study identified the primary drivers of consumer purchase intention and clarified how these drivers interact within the local market.

Findings demonstrated that the marketing mix exerts a significant and positive influence on consumers' intentions to purchase banana and taro chips. Additionally, the marketing mix meaningfully enhanced attitude, subjective norms, and perceived behavioral control, highlighting its broader influence in shaping the mechanisms proposed by the TPB. Importantly, subjective norms emerged as a robust predictor of intention, underscoring the pivotal role of social approval and community influence in the adoption of locally innovated snacks. In contrast, neither attitude nor perceived behavioral control showed significant effects, suggesting that favorable attitudes or perceived ease of access are alone insufficient to stimulate purchase in this context, perhaps reflecting the vital importance of external trust, endorsement, and market cues in shaping novel food choices.

The findings can be beneficial for SMEs and food innovators seeking to position banana and taro chips competitively. By improving product quality, offering affordable pricing, adopting effective promotional strategies, and expanding distribution channels, businesses can more effectively stimulate consumer interest and adoption. Moreover, leveraging endorsements, word-of-mouth, and social media influence may help reinforce normative pressures and boost consumer willingness to purchase.

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Acknowledgments

The authors gratefully acknowledge the Research, Extension, and Innovation Division of Sultan Kudarat State University for their invaluable technical and institutional support throughout the research process.