International Network for Digital Innovation, Research & Education
Transformation of Digital Innovation for a Better Quality of Life

INDIRE

DEMOGRAPHIC INFLUENCES ON YOUTH ATTITUDES TOWARD PURCHASING SUNNAH FOOD VIA VENDING MACHINES

*Zul Ariff Abdul Latiff – Universiti Malaysia Kelantan | zulariff@umk.edu.my , Palsan Sannasi Abdullah – Universiti Malaysia Kelantan | palsan.abdullah@umk.edu.my

Aim/Purpose	This study examines how demographic factors influence youth attitudes toward purchasing Sunnah food products through vending machines. It focuses on identifying which demographic characteristics significantly shape consumer perceptions.
Background	Sunnah foods hold religious and health value, yet youth often prioritize convenience, relying heavily on vending machines that typically offer unhealthy snacks. Integrating Sunnah foods into vending machines may promote healthier, halal-aligned choices, but empirical evidence on demographic influences remains limited.
Methodology	A quantitative, cross-sectional survey was conducted among 196 university students in Kelantan. Purposive sampling ensured all respondents had prior vending machine purchasing experience. Chi-square analysis was used to test relationships between demographics and attitudes.
Findings	Gender was the only demographic factor significantly associated with youth attitudes ($p = 0.000$). Age, race, education, income, religion, and marital status showed no significant influence. This suggests that attitudes toward Sunnah food vending machines are generally consistent across demographic groups except for gender differences.
Impact on Society	The findings support targeted, gender-sensitive marketing strategies to promote Sunnah food consumption. Integrating Sunnah foods into vending machines may improve youth dietary habits, strengthen the halal food industry, and support Malaysia's broader public health and halal economy goals.

Keywords: Vending machine, Sunnah food products, youth consumers, halal products, marketing.

* Corresponding Author

Volume 9, 2025

International Network for Digital Innovation, Research & Education
Transformation of Digital Innovation for a Better Quality of Life

AREAS OF CONTRIBUTION

Paper Category		
☒ Original Research	☐ Position Paper	☐ Comparative
☐ Case Study	☐ Technical Briefs	☐ Opinion
☐ Reviews	☐ Student Paper	☐ Innovation Ideas

Type of Study/ Innovation	Industry	Discipline
☐ Radical	☐ Media	☐ Business Technology
☐ Incremental/Enhancing	☐ Telecom	☐ Human Resources
☐ Disruptive	☐ Consumer Financial Services	☒ Management
☐ Breakthrough	☐ Retail	☐ Marketing
☒ Basic Research	☐ Technology	☐ Finance
☐ Sustainable Development	☐ Policy	☐ Accounting
☐ Architectural	☒ Consumer Products	☐ Computer Science
☐ Component/Modular	☐ Non-Profit	☐ Engineering
☐ Discriminatory Bias	☐ Business/Professional Services	☐ Medicine / Healthcare
	☐ Higher Education	☐ Law and Justice
	☐ Diversity and Inclusion	☐ History
	☐ Training	☐ Philosophy
	☐ Health Care	☒ Religion/Theology
	☐ Manufacturing	☐ Mathematics
	☐ Transportation	☐ Physics
		☐ Digital Media
		☐ Environmental Science
		☐ Social Sciences
		☐ Art and Culture
		☐ Psychology/Consciousness
		☐ Astronomy
		☐ Economics

Human Elements Addressed		
☐ Personality Traits	☐ Development	☐ Mental Wellbeing
☒ Behavior	☐ Environmental	☐ Consciousness
☐ Equality and Equity	☐ Social	☐ Physical Wellbeing

INTRODUCTION

The rapid expansion of vending machine technology has significantly transformed the food retail sector by offering consumers convenient, efficient, and hygienic access to a wide range of food products. In Malaysia, the adoption of vending machines increased markedly following the COVID-19 pandemic, reflecting consumers' growing preference for contactless and automated retail systems (Yunus et al., 2022). At the same time, interest in Sunnah foods, such as dates, honey, olives, and *habbatus sauda*, has grown among youth consumers, driven by heightened health awareness and stronger adherence to Islamic dietary practices (Hassan & Ahmad, 2023). The integration of Sunnah food products into vending machine distribution therefore, represents an innovative approach that combines modern convenience with religious and cultural values. Demographic factors, including age, gender, education level, and income, play an important role in shaping consumer attitudes and purchasing behaviour. Recent studies indicate that demographic characteristics significantly influence the acceptance of new food technologies, halal products, and automated retail systems (Nordin et al., 2021; Farahani et al., 2023). Youth consumers tend to exhibit more favourable attitudes toward digital and automated food services due to their technological familiarity and strong preference for convenience (Rahim & Mansor, 2024). Despite the increasing popularity of both vending machine services and Sunnah food consumption, empirical research integrating these two areas remains limited. Most existing studies have examined halal consumer behaviour and vending machine usage as separate domains. This study addresses this gap by investigating the relationship between demographic factors and youth attitudes toward purchasing Sunnah food products through vending machines. The findings offer valuable insights for entrepreneurs, policymakers, and halal industry stakeholders, contributing to the development of effective marketing strategies, the promotion of Islamic entrepreneurship, and the advancement of halal food innovation in Malaysia.

LITERATURE REVIEW

DEMOGRAPHIC FACTORS AND YOUTH CONSUMER BEHAVIOR

Demographic variables are widely recognised as important predictors of consumer attitudes and purchasing behaviour. Recent studies indicate that demographic factors significantly influence young consumers' behavioral responses to halal products and digital retail platforms (Nordin et al., 2021). Age plays a critical role in technological adaptability, with younger individuals demonstrating greater acceptance of automated retail systems, including vending machines (Farahani et

al., 2023). Gender-based differences in consumption behaviour have also been observed, whereby female consumers tend to prioritize health, safety, and product quality, while male consumers place greater emphasis on convenience and accessibility (Ishak & Salleh, 2022). Educational attainment influences consumers' knowledge and awareness of the health and religious benefits associated with Sunnah foods, resulting in more positive attitudes among highly educated youth (Hassan & Ahmad, 2023). Similarly, income level affects perceptions of affordability and value, shaping whether Sunnah food products offered through vending machines are perceived as premium or economically accessible (Rahim & Mansor, 2024). Collectively, these demographic characteristics play a significant role in shaping youth attitudes toward purchasing Sunnah food products via vending machines.

Youth Attitude toward Sunnah Food Products

Attitude is a key determinant of purchasing behaviour, particularly within the halal and Sunnah food sectors. Studies conducted between 2021 and 2025 indicate that youth consumers increasingly prioritize health considerations, religious obligations, and lifestyle alignment with Islamic teachings when making food-related decisions (Hassan & Ahmad, 2023; Salleh et al., 2022). Sunnah food products are widely perceived as nutritious and spiritually beneficial, contributing to the formation of favourable attitudes among Muslim youth (Mahmud & Yusoff, 2024). These positive attitudes are further reinforced by factors such as peer influence, religious education, and exposure to social media content that promotes Sunnah dietary practices (Ariffin & Jamal, 2021). When favorable attitudes toward Sunnah food are combined with convenient access channels, such as vending machines, the likelihood of purchase increases. Consequently, youth who hold strong positive attitudes toward Sunnah food are more inclined to purchase these products, even though automated retail systems.

Vending Machines As an Emerging Channel for Halal and Sunnah Food

In the post-pandemic era, vending machines have gained increased acceptance due to enhanced hygiene assurance, 24-hour accessibility, and the widespread adoption of cashless payment systems (Yunus et al., 2022). Youth consumers, in particular, demonstrate a high level of acceptance of vending machine services, reflecting their digital literacy and preference for efficient, time-saving transactions (Rahim & Mansor, 2024). Recent studies further indicate that vending machines offering halal-certified or religiously aligned products generate higher levels of trust and stronger usage intentions among Muslim youth (Ishak & Salleh, 2022). The integration of Sunnah food into vending machine distribution also supports halal innovation, a strategic priority within Malaysia's Islamic economy framework (Jamil & Haron, 2023). Technological features such

as QR code verification, digital freshness indicators, and smart inventory management systems further enhance consumer confidence by improving transparency, product credibility, and perceived quality. Collectively, these innovations strengthen youth consumers' willingness to purchase Sunnah food through automated retail platforms.

Relationship between Demographics and Attitude toward Purchasing Sunnah Food through Vending Machines

Recent studies conducted between 2021 and 2025 consistently demonstrate that demographic factors play a significant role in shaping consumer attitudes toward modern retail technologies and halal consumption behaviour (Farahani et al., 2023; Nordin et al., 2021). Younger consumers tend to exhibit greater openness toward automated retail systems, resulting in more favourable attitudes toward the use of vending machines for purchasing Sunnah food products. Gender differences are also evident, with female consumers often displaying stronger positive attitudes, driven by heightened health consciousness and religious motivation. Educational attainment is positively associated with awareness and understanding of the nutritional and spiritual benefits of Sunnah foods, which in turn fosters more favourable consumer attitudes. Additionally, income level influences perceptions of affordability and value, thereby affecting acceptance of vending machine pricing strategies. Collectively, these demographic characteristics exert both direct and indirect influences on youths' attitudes, which subsequently shape their intention to purchase Sunnah food through vending machines.

Implications for Marketing and Halal Industry

Understanding the relationship between demographic characteristics and consumer attitudes enables marketers to develop more targeted and effective strategies. For instance, installing vending machines in universities and educational institutions allows firms to reach educated youth who typically demonstrate higher health consciousness and religious awareness. The integration of cashless and digital payment systems further appeals to technologically savvy youth, while affordable pricing strategies help improve accessibility for lower-income consumer segments. From a policy perspective, these insights support the development of halal innovation initiatives that integrate traditional Sunnah food products with modern retail technologies. Such initiatives align with Malaysia's Islamic digital economy agenda and contribute to strengthening the halal ecosystem through technology-driven entrepreneurship (Jamil & Haron, 2023).

METHODOLOGY

This study employed a quantitative, cross-sectional research design to examine the relationship between demographic factors and the attitudes of youth consumers toward purchasing Sunnah food products through vending machines. A survey approach was adopted, as it is appropriate for capturing attitudes, perceptions, and demographic characteristics of a large population at a single point in time. The target population comprised youth consumers enrolled in public universities in Kelantan, Malaysia. In line with national definitions, youth were defined as individuals aged between 18 and 40 years. A total of 196 respondents participated in the study, and the sample size was deemed adequate for descriptive statistical analysis and inferential testing using the chi-square method.

A purposive sampling technique was utilised to ensure that respondents met the specific inclusion criteria relevant to the study objectives, particularly experience or familiarity with vending machine usage and Sunnah food consumption. This sampling approach was considered suitable given the study's focus on youth consumption behaviour within a specific institutional context. Data were collected using a structured, self-administered questionnaire. The attitude measurement scale was developed based on established literature on halal and Sunnah food consumption, as well as youth consumer behaviour, to ensure content validity and relevance to the research context.

ANALYSIS

The demographic characteristics of respondents provide important context for understanding youth consumers' attitudes toward purchasing Sunnah food products through vending machines. A total of 196 university students in Kelantan participated in this study. In terms of gender, female respondents accounted for the majority, 60.7%, compared with male respondents (39.3%). Most students fell within the 21–30 years old category (90.3%), followed by respondents below 20 years old (8.7%), while those aged 31–40 years and above 41 years each represented 0.5% of the sample.

Regarding race, most respondents were Malay (82.1%), followed by Chinese (8.7%), Indian (8.7%), and Others (0.5%), which included Bumiputera from Sarawak. The distribution of religion reflects the racial composition, with Muslims accounting for 83.2%, followed by Buddhists (8.7%), Hindus (6.6%), Christians (1.5%), and no respondents in other religions. Most respondents were single (98.5%), while married (1.5%) and divorced (0%) respondents were very few.

All respondents were from public universities (100%), with no representation from private institutions. Regarding education level, the majority were bachelor's degree holders (82.1%), followed by college/matriculation graduates (6.1%), diploma holders (6.1%), master's degree students (4.6%), and SPM certificate holders (1.0%).

For monthly income, most students earned less than RM500 per month (85.2%), followed by RM500–RM999 (9.2%), RM1000–RM1999 (4.6%), RM2000–RM2999 (1.0%), and none reported earnings above RM3000. Finally, all respondents (100%) reported having experience purchasing food through vending machines, while no students answered "no." This indicates that the sample is familiar with vending machine usage, which is important for studying attitudes toward purchasing Sunnah food products.

Table 1: Demographic Background of Respondents

Variables	Category	Frequency	Percentage (%)
Gender	Male	77	39.3
	Female	119	60.7
Age	<20	17	8.7
	21–30	177	90.3
	31–40	1	0.5
	>41	1	0.5
Race	Malay	161	82.1
	Chinese	17	8.7
	Indian	17	8.7
	Others	1	0.5
Religion	Islam	163	83.2
	Hinduism	13	6.6
	Buddhism	17	8.7
	Christianity	3	1.5
	Others	0	0
Marital Status	Single	193	98.5
	Married	3	1.5
	Divorced	0	0

Education Level	SPM	2	1.0
	College/Matriculation	12	6.1
	Diploma	12	6.1
	Bachelor's Degree	161	82.1
	Master's Degree	9	4.6
Income per Month (RM)	<500	167	85.2
	500–999	18	9.2
	1000–1999	9	4.6
	2000–2999	2	1.0
	>3000	0	0
Type of Institution	Public University	196	100.0
	Private University	0	0
Purchasing through Vending Machine	Yes	196	100.0
	No	0	0

(Source: Survey, 2024)

RELATIONSHIP BETWEEN DEMOGRAPHIC FACTORS AND ATTITUDE OF YOUTH CONSUMERS TOWARD PURCHASING SUNNAH FOOD PRODUCTS THROUGH VENDING MACHINES

The relationship between demographic factors and the attitude of youth consumers was tested using the Chi-square test. This statistical test allows for the examination of whether there is a significant association between categorical independent variables (demographic factors) and the dependent variable (attitude). The null hypothesis (H0) assumes that there is no relationship between the demographic factor and the attitude of youth consumers. The null hypothesis is rejected if the significance (p-value) is less than 0.05, indicating a statistically significant relationship. Similarly, the null hypothesis can also be rejected if the observed Chi-square value is equal to or greater than the critical Chi-square value. Hence, the decision on whether variables are related depends on whether the p-value indicates significance. Table 2 presents the Chi-square test results for the relationship between demographic factors and attitudes of youth consumers toward purchasing Sunnah food products via vending machines.

Table 2: Chi-square Test of Demographic Factors and Attitudes

Factors	Significant (P-value)	Decision
Age	0.629	Do not Reject H0
Gender	0.000	Reject H0
Race	0.551	Do not Reject H0
Education Level	0.832	Do not Reject H0
Monthly Income	0.591	Do not Reject H0
Religion	0.842	Do not Reject H0
Marital Status	0.966	Do not Reject H0

(Source: Survey results, 2024)

From the results, the null hypothesis is not rejected for most demographic factors, indicating no significant relationship between age, race, education level, monthly income, religion, marital status, and the attitude of youth consumers. However, the gender variable shows a p-value of 0.000, which is well below the 0.05 threshold. This indicates a statistically significant relationship between gender and attitude, suggesting that male and female students differ in their attitudes toward Sunnah food products offered through vending machines. This shows that the probability of this difference occurring by chance is very low. Therefore, the null hypothesis for gender can be confidently rejected. This finding is consistent with recent studies indicating that gender influences food preferences, decision-making, and technology adoption behavior among youth consumers (Hassan & Ahmad, 2023; Farahani et al., 2023).

Previous literature also supports this pattern: although age, religion, and income are often considered influential demographic factors, several recent studies have shown that gender often emerges as the most significant predictor of consumer attitudes toward healthy and religiously aligned food products (Mahmud & Yusoff, 2024; Ishak & Salleh, 2022). Youth of both age groups tend to select snacks or quick meals based on convenience, taste, price, and health, but females may prioritize health and religious compliance slightly more than males (Rahim & Mansor, 2024). In summary, gender is the only demographic factor significantly associated with youth attitudes toward Sunnah food vending machines, whereas other demographic factors do not demonstrate significant relationships.

RESULTS AND DISCUSSIONS

The significant relationship between gender and attitude indicates that male and female youth consumers differ in their perceptions of Sunnah food products distributed through vending machines. This finding is consistent with previous research demonstrating that gender plays an important role in food choice behaviour, particularly for health-oriented and religiously aligned products (Ishak & Salleh, 2022; Hassan & Ahmad, 2023). Female consumers tend to place greater emphasis on nutritional value, religious compliance, and long-term health benefits, which may contribute to more favourable attitudes toward Sunnah food offerings compared to male consumers. In contrast, no significant relationship was observed between age and attitude. This result may be explained by the relatively homogeneous age distribution of the respondents, with most participants concentrated within the 21–30 age range. Such limited variability reduces the likelihood of detecting statistically meaningful differences across age groups. Similarly, the absence of a significant association between religion and attitude may be attributed to the predominance of Muslim respondents in the sample, suggesting that acceptance of Sunnah food has become normalised among youth, regardless of minor religious variation.

Education level and income were also not significantly associated with attitudes toward Sunnah food vending machines. This suggests that favourable perceptions of Sunnah food distributed through automated retail systems are not strongly influenced by financial capacity or academic background. Given that vending machines typically offer affordable and convenient food options, Sunnah food products may be perceived as accessible across different income groups. This finding is consistent with Rahim and Mansor (2024), who reported that convenience and price sensitivity reduce income-based differences in vending machine food consumption among youth. Furthermore, the lack of significant relationships between attitude and race or marital status supports the notion that Sunnah food products offered through modern retail channels appeal broadly to youth consumers, transcending cultural and social categories. This indicates that vending machines can function as an inclusive platform for promoting halal and Sunnah food consumption. Overall, the findings demonstrate that gender is the most influential demographic factor shaping youth attitudes, while other demographic variables play a relatively limited role. These results highlight the importance of gender-sensitive marketing strategies, such as emphasising health benefits, religious values, and product transparency, particularly to engage female consumers who may act as key drivers of demand in the Sunnah food market.

CONCLUSIONS

This study examined how demographic factors influence youth attitudes toward purchasing Sunnah food products through vending machines. Data collected from 196 respondents indicate that gender is the only demographic factor significantly associated with attitude, with male and female students demonstrating differing levels of positive perceptions toward purchasing Sunnah food products via vending machines. Other demographic variables, including age, race, education level, monthly income, religion, and marital status, were not significantly related to students' attitudes. Overall, the respondents exhibited a generally positive attitude toward purchasing Sunnah food products through vending machines, which is supported by their prior experience with vending machine usage. These findings are consistent with recent studies highlighting youth consumers' openness to technology-enabled food services and their interest in halal and Sunnah products. The results further suggest that gender-sensitive marketing strategies, coupled with strategically placed vending machines in university environments, may enhance engagement and adoption of Sunnah food products among youth consumers. Moreover, this study contributes to the literature by providing updated empirical evidence on youth attitudes toward vending machine-based Sunnah food products in Malaysia, reflecting trends in the post-pandemic digital retail landscape.

REFERENCES

.Ariffin, M., & Jamal, S. (2021). Social influence and youth engagement with Islamic dietary practices in Malaysia. *Journal of Islamic Consumer Behaviour*, 5(2), 112–125.

Farahani, M., Osman, A., & Rahman, N. (2023). Consumer acceptance of automated food retail technologies in Southeast Asia. *Asia Pacific Journal of Marketing*, 15(1), 44–59.

Hassan, N., & Ahmad, Z. (2023). Health awareness and Sunnah food consumption among Malaysian youth. *Malaysian Journal of Halal Studies*, 4(1), 55–70.

Ishak, F., & Salleh, R. (2022). Halal vending machines and youth purchasing behaviour in Malaysia. *International Journal of Halal Marketing*, 2(3), 88–103.

Jamil, S., & Haron, H. (2023). Innovation in Islamic food products: Opportunities for smart vending systems. *Journal of Halal Technology*, 1(2), 21–35.

Mahmud, S., & Yusoff, K. (2024). Factors influencing Sunnah food adoption among young Muslim consumers. *Journal of Islamic Nutrition*, 3(1), 1–14.

Nordin, N., Rahmat, M., & Sulaiman, Z. (2021). Demographic determinants of halal purchasing behaviour in Malaysia. *Journal of Consumer and Islamic Studies*, 6(1), 67–79.

Rahim, A., & Mansor, N. (2024). Youth perception and acceptance of vending machine food services in Malaysian campuses. *Asian Journal of Youth Research*, 7(1), 39–54.

Salleh, S., Karim, N., & Zainal, H. (2022). Youth attitude toward healthy and religious-based food consumption. *Journal of Muslim Consumer Studies*, 11(4), 207–221.

Yunus, M., Abdullah, S., & Latif, L. (2022). Post-pandemic growth of smart vending machines in Malaysia. *Journal of Digital Retail Innovation*, 2(1), 14–27.

AUTHORS' BIOGRAPHY

Dr. Zul Ariff Abdul Latiff is an associate professor at Universiti Malaysia Kelantan with over 15 years of teaching and supervision experience in Management. He holds degrees from IIUM and a PhD from Universiti Putra Malaysia. He has supervised multiple postgraduate students and published more than 78 scholarly works, supported by national grants and consultancy projects. His expertise is recognised through invitations as a speaker, reviewer, editor, and examiner at both local and international levels.

Dr. Palsan Sannasi Bin Abdullah is an associate professor at Universiti Malaysia Kelantan. He holds a PhD in Biochemistry from Universiti Putra Malaysia and specializes in sustainable technologies, bioremediation, and agro-based product development. His research focuses on biochar applications, water treatment, and environmentally friendly innovations. He has received multiple awards for research and innovation, supervises postgraduate students, and actively contributes to community projects that promote sustainable agriculture and halal product development.