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The menu revealed: Unpacking the influence of nutrition labelling on fast food choices

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ABSTRACT

This study delves into the intriguing realm of fast-food consumer behavior, focusing on the pivotal role of nutrition labelling in shaping purchasing intentions. Through the Theory of Planned Behaviour lens, the research investigates how nutrition information influences consumer choices, with a specific focus on students at UiTM Pulau Pinang, Permatang Pauh. Aligned with Sustainable Development Goal 3 (SDG 3), which aims to ensure healthy lives and promote well-being for all at all ages, the study explores the potential of nutrition labelling to enhance consumer health consciousness. Employing a survey methodology, the study captures valuable insights into customer attitudes toward nutrition labelling and its impact on their fast-food consumption habits. Analysis using SPSS 28 software reveals significant positive correlations between the Theory of Planned Behaviour constructs, indicating a shift towards health consciousness among fast food consumers. Notably, the inclusion of nutrition information on menus emerges as a key driver influencing customers' future purchase intentions, encouraging them to opt for healthier meal choices. This research sheds light on the evolving landscape of fast-food consumption, highlighting the growing importance of nutrition labelling in catering to health-conscious consumer preferences. The findings offer practical implications for fast food establishments, emphasizing the potential benefits of incorporating nutrition labelling into their menus to attract and retain health-conscious consumers. While the study's scope is limited to a specific student population, it provides a springboard for future research to explore similar trends in broader consumer segments.

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1. INTRODUCTION

Dining out has become increasingly popular as people seek convenience in their fast-paced lives. This trend is evident in the global expansion of fast-food restaurants, which cater to the growing demand for quick and accessible meals. However, the association between dining out, especially at fast-food restaurants, and health concerns such as obesity has raised questions about the nutritional quality of such food choices (Marathe et al., 2019).

To address these concerns, some fast-food chains have started providing nutrition information on their websites and menu labels, aiming to offer customers transparency about the nutritional content of their food. For example, McDonald's is one of the brands that have embraced this practice (Sobaih & Abdelaziz, 2022).

In Malaysia, the cultural tradition of eating out has persisted over time and is increasingly influenced by urban lifestyles. However, this trend can lead to detrimental eating habits, including overconsumption, irregular eating schedules, and imbalanced diets. These practices are linked to various health challenges, such as obesity, hypertension, heart disease, cancer, and diabetes (Pudasaini et al., 2024). Therefore, this study aims to address these health concerns, aligning with Sustainable Development Goal 3 (SDG 3) of ensuring good health and well-being. Additionally, to address the health implications of dining out, the Malaysian Ministry of Health has implemented initiatives such as the National Plan of Action for Nutrition III (NPA III) (2016 - 2025) (MOH Malaysia, 2016).

Research suggests that providing nutrition labels on menus can influence customers' food choices, with label use correlating with healthier food selections (Pfledderer et al., 2024; Mhurchu et al., 2017). Similarly, access to calorie information and nutrition menu labelling can lead to better food choices (Mohammed, 2024; Salhadi et al., 2018). However, there is a lack of studies specifically focusing on this aspect in Malaysia. Therefore, this study aims to investigate the impact of nutrition labelling on customer-buying intentions at fast-food restaurants among students at UiTM Pulau Pinang. The study employs the Theory of Planned Behaviour (TPB) (Azjen, 1991) to understand and explore this relationship. The Theory of Planned Behaviour has been widely used to predict human intention and behaviour, including food consumption decisions (Cao et al., 2024), organic food consumption (Sultan et al., 2020), customer intentions towards food waste (Coskun & Özbük, 2020), and food safety (Lin & Roberts, 2020). This study seeks to apply the Theory of Planned Behaviour to understand customers' preferences and behaviour regarding items with nutrition labels in fast-food restaurants. The study could contribute to the development of health promotion strategies targeting fast-food consumers. These strategies could empower individuals to make healthier food choices and promote a healthy and well-being culture.

2. LITERATURE REVIEW

2.1 Nutrition labelling

The nutrition labelling on restaurant menus has empowered customers to make healthier food choices (Hashad et al., 2021). Studies have demonstrated that “customers value” and are more likely to choose healthier menu options when provided with nutrition information (Auchincloss et al., 2013). This demand for nutritional transparency extends to various restaurants, including fast-food establishments (Giazitzi & Boskou, 2021).

However, challenges must be addressed in effectively conveying this information to customers. Many individuals need easy access to dietary information, especially in restaurant settings where portion sizes and nutrient content can be misleading (Sobaih & Abdelaziz, 2022). To address this, clear and standardized

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nutrition labelling is needed to include essential information such as calories, carbohydrates, protein, sugar, and fat content (Sogari et al., 2018).

Various approaches to nutrition labelling have been proposed (Chung et al., 2024), including health endorsement logos and "traffic light" symbols to indicate the healthiness of food choices (Scarborough et al., 2015). These strategies aim to provide customers with easily understandable and actionable information to support healthier eating habits.

2.2 Customer intention to buy nutrition-labelled items

The Theory of Planned Behaviour suggests that an individual's behavioral intentions are influenced by their attitude towards the behavior, their subjective norms, and their perceived behavioral control. In the context of menu labelling in restaurants, understanding how these factors affect consumer purchase intention is crucial for businesses looking to implement menu labelling strategies effectively. Purchase intention is a crucial aspect of consumer decision-making, focusing on the factors that drive individuals to choose a particular brand (Dani et al., 2012). According to the Theory of Planned Behaviour, behavior is influenced by both personal desires and perceptions of control. Incorporating these aspects into predictive models enhances their accuracy. Ajzen (1991) emphasizes intention as the critical determinant of behavior, influenced by attitudes. This view is supported by Kim et al. (2013), who suggest that positive or negative intention significantly impacts behavior probability. Intention is seen as the encapsulation of motivational factors that drive behavior. Recent studies have investigated the impact of nutrition labelling on consumer product evaluations, purchase intentions, and behavior (Karatzi et al., 2021).

2.3 Attitude towards nutrition labelling

Attitudes play a pivotal role in shaping behavioral intentions, particularly concerning nutrition labelling. Ajzen (1991) defines attitude as the extent to which an individual favours or disfavours engaging in a behavior. Positive attitudes are associated with perceiving a behavior as beneficial or leading to valued outcomes (Ajzen, 1991). According to the Theory of Planned Behavior, behavioral intentions are influenced by attitudes, suggesting that favourable attitudes increase the likelihood of engaging in a behavior (Ajzen et al., 2018).

Research consistently demonstrates a significant correlation between attitudes and intentions or behaviors (Gao et al., 2017). For instance, studies have shown that attitudes influence behavioral intentions to read nutritional labels (Kozup et al., 2003). Additionally, the appearance of nutrition labels has been found to impact attitudes and purchase intentions (Burton & Creyer, 2004). Kozup et al. (2003) emphasize that presenting nutritional labels for a specific item significantly influences nutrition-related attitudes.

Furthermore, the expectation disconfirmation theory suggests that the discrepancy between expected and objective nutrient amounts interacts with the availability of nutritional information and the perceived healthfulness of the item (Kim et al., 2013). Consequently, attitude emerges as a critical predictor of behavioral intention to utilize nutrition labelling. As previously defined, a person's attitude toward specific conduct is determined by their significant beliefs about that behavior (Kim et al., 2013).

2.4 Subjective norms

Subjective norm is a key concept in the Theory of Planned Behavior that refers to the perceived social pressure individuals feel from others to perform or not perform a behavior. It reflects the influence of social factors, such as norms, expectations, and opinions of significant others, on an individual's behavioral intentions. Additionally, Arya (2024) discovered that subjective norms significantly influence sustainable food consumption. Therefore, subjective norms are based on the belief that people consider the expectations of others when deciding whether to engage in a particular behavior. This suggests that understanding the social context and peer influence is equally essential when promoting healthy eating habits among young

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adults. As the awareness of nutrition labelling continues to grow, it is essential to consider the subjective norms students may face to effectively promote healthier food choices on campus. McEachan et al. (2016) also discovered that subjective norms were a significant predictor of intentions to engage in physical activity among adolescents, highlighting the importance of social influences on health behaviours.

2.5 Perceived behavioural control

Perceived behavioural control is the third factor that influences behavioural intention. An individual's view of how easy or difficult it is to manage a specific action is known as perceived behavioural control (Ajzen, 1991). According to Ajzen (1991), these beliefs refer to how a person sees the resources and opportunities needed to do a specific behaviour and how important they think those resources and opportunities are for getting the desired results. The findings of the study demonstrate that perceived behavioural control has the most significant influence on food waste behaviour and intention (Sirieix et al., 2017). This element highlights the degree to which a person believes that a conduct is under his or her volitional control (Fielding et al., 2005). Another study indicates that the perceived behavioral control may increase by inquiring about the consumers' trust in their capacity to interpret nutritional information and make a healthy choice (Stran et al., 2016). Shin et al. (2018) examined consumer preference for organic meals by inquiring about the customers' financial, time, and self-perceived capabilities and confidence in selecting them. Attitude, subjective norms, and perceived behavioural control are related to the intention of fast-food restaurant customers to utilize menu labelling (Delvarani et al., 2013). Additionally, they reported a plan to use calorie labels (Stran et al., 2016). Therefore, based on the aforementioned, the hypotheses have been established as follows:

H1: The attitude of students towards nutrition labelling influences their buying intentions at fast-food restaurants among UiTM Pulau Pinang students.

H2: Subjective norms influence buying intentions at fast-food restaurants among UiTM Pulau Pinang students.

H3: Perceived behavioral control influences buying intentions at fast-food restaurants among UiTM Pulau Pinang students.

2.6 Research framework

Numerous factors shape customers' intentions and subsequent actions, as posited by the Theory of Planned Behavior (Bosnjak et al., 2020). This theory asserts that attitudes, subjective norms, and perceived behavioral control collectively influence an individual's intentions (Ajzen, 1991). Beyond its application in the hotel and tourism sectors, the Theory of Planned Behaviour has garnered widespread utilization in forecasting consumer intentions and behaviors. Notably, perceived behavioral control was integrated into the model to elucidate actions beyond an individual's volitional control. While attitudes and subjective norms may predict behaviors within the realm of voluntary actions, perceived behavioral control accommodates scenarios where individuals may face constraints (Ajzen et al., 2018). Within the hospitality context, the Theory of Planned Behaviour has been adapted to anticipate food consumption decisions (Arya, 2024).

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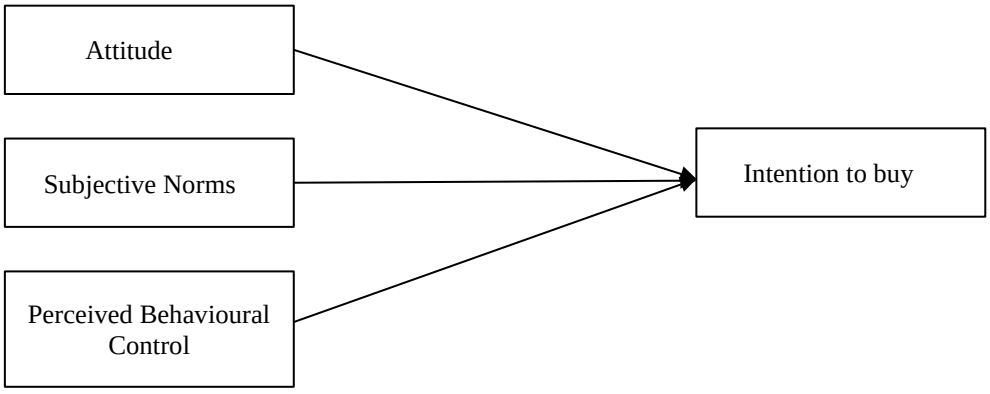

Figure 1: Theoretical framework

3. METHODOLOGY

The study employed a cross-sectional quantitative approach, utilizing non-probability convenient sampling techniques. An online questionnaire was meticulously designed to suit the unique context of the research setting, focusing on students at UiTM Pulau Pinang, Permatang Pauh, particularly those accustomed to fast-food dining experiences. The survey instrument was disseminated via Google Forms, leveraging social media platforms such as WhatsApp, Telegram, Facebook, and Instagram, following approval from the Research Ethics Committee. Data collection spanned approximately eight weeks.

The population for this study comprised active students from various faculties at UiTM Pulau Pinang, Permatang Pauh Campus. The sample size of 355 was determined using Krejcie and Morgan's table (1970), drawn from a population of 4290 students as of June 14, 2022. The sample was selected based on convenience and comprised students who had consumed fast food from fast-food restaurants in the six months preceding the survey.

Research instruments included a self-administered questionnaire designed in a 5-point Likert scale format, adapted from Sobaih and Abdelaziz (2022). The questionnaire comprised sections covering the Theory of Planned Behavior variables, including the intention to buy (3 items), attitude (4 items), subjective norms (3 items), and perceived behavioral control (4 items). The questionnaire was pre-tested and translated into both English and Bahasa Malaysia.

Data analysis was performed using IBM SPSS version 28.0, including descriptive statistics for participants' background, reliability analysis for questionnaire items, and multiple regression analysis to examine the effects of the Theory of Planned Behaviour's constructs on intention to buy in fast-food restaurants based on nutrition labelling provided.

4. RESULTS AND DISCUSSION

4.1 Reliability test

Cronbach’s alpha was employed to assess the internal consistency and reliability of the measured variables. All variables surpassed a threshold of 0.8, ranging from 0.85 to 0.92, indicating very good to excellent reliability (Ursachi et al., 2015).

4.2 Respondents profile

The demographic analysis encompassed variables such as gender, age, level of education, program enrollment, dietary habits, frequency of fast-food consumption per month, and respondents' recent

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experience of fast-food consumption within six months. The study involved 355 participants, consisting of students from various programs and academic levels at UiTM Pulau Pinang, Permatang Pauh.

The demographic distribution of the 355 respondents involved in this study with 36.3 percent (n=129) male and 63.7 percent (n=226) female. The age distribution revealed that 53 percent (n=188) of respondents were aged 18-20 years, 22.3 percent (n=79) were 21-22 years old, 22 percent (n=78) were 23-24 years old, and 2.8 percent (n=10) were 25 years old and above.

In terms of educational level, 41.4 percent (n=147) were Bachelor's degree students, 55.8 percent (n=198) were Diploma students, and 2.8 percent (n=10) were Pre-Diploma students. Program distribution indicated that the majority of respondents were from programme HM245 (18 percent, n=64), followed by HM112 (11.8 percent, n=42), HM240 (9.9 percent, n=35), HM115 (7.9 percent, n=28), and other programs with varying percentages.

Regarding diet status, 86.2 percent (n=306) reported not following a special diet, while the remaining respondents reported following various special diets. In terms of fast-food consumption frequency, 43.7 percent (n=155) of respondents reported consuming fast food 3-5 times per month, 31.8 percent (n=113) reported consuming it 1-2 times per month, and 24.5 percent (n=87) reported consuming it six times or more per month. Additionally, all respondents (100 percent, n=355) reported having consumed fast food within the past six months.

4.3 Multiple regression analysis

Based on the results provided in Table 1, the multiple regression analysis demonstrates that subjective norms and perceived behavioral control significantly predict students' intention to buy at fast-food restaurants. The F-statistic ($F(3, 351) = 134.301$, $p < 0.01$) indicates a substantial impact of the independent variables on the dependent variable. Additionally, the model accounts for 53.4% of the variance in intention to buy ($R2 = 0.534$), suggesting a robust explanatory power.

Table 1: The results of the regression analysis.

Hypothesis			**β**	**t-value**	**Sig.**	**Results**
H1 Attitude	→	Intention to buy	-.042	-0.802	0.423	Not supported
H2 Subjective norms	→	Intention to buy	.428	8.298	0.000	Supported
H3 Perceived Behavioural Control	→	Intention to buy	.348	6.396	0.000	Supported

*$p < 0.01$ $R2 = 0.534$ $F = (3,351), 134.301$

Regarding the hypotheses, H1 (Attitude towards nutrition labelling): The Beta coefficient ($\beta = -0.042$, $p > 0.01$) suggests no significant association between students' attitudes towards nutrition labelling and their buying intentions at fast-food restaurants. Therefore, H1 is not supported. H2 (Subjective Norms): The Beta coefficient ($\beta = 0.428$, $p < 0.01$) indicates that subjective norms significantly influence buying intentions at fast-food restaurants. The positive relationship suggests stronger subjective norms lead to higher buying intentions, supporting H2. H3 (Perceived Behavioural Control): The Beta coefficient ($\beta = 0.348$, $p < 0.01$) suggests a significant association of perceived behavioural control on buying intentions.

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The positive association implies that greater perceived behavioural control results in higher buying intentions, supporting H3.

The findings of this study provide valuable insights into the factors influencing buying intentions among students at UiTM Pulau Pinang at fast-food restaurants. By examining attitude, subjective norms, and perceived behavioral control as independent variables in a multiple regression analysis, their influence on the intention to buy was elucidated.

Firstly, it was revealed that attitudes toward nutrition labelling did not exert a significant influence on students' buying intentions at fast-food restaurants. This unexpected result suggests that while students may hold favourable attitudes toward nutrition labelling, these attitudes may not necessarily translate into actual purchasing behavior. Possible explanations for this discrepancy could include competing factors such as taste preferences, convenience, and social influences that override the influence of attitudes toward nutrition labelling on buying intentions.

Conversely, subjective norms emerged as a significant predictor of buying intentions among students. The positive association between subjective norms and buying intentions suggests that students' perceptions of social pressure and influence from peers, family, and social groups significantly impact their purchasing decisions at fast-food restaurants. This finding underscores the importance of social factors in shaping consumer behavior and highlights the need to consider peer influences when designing interventions to promote healthier eating habits among students.

Similarly, perceived behavioral control significantly influenced buying intentions at fast-food restaurants. This suggests that students' perceptions of their ability to control their behaviour in the context of fast-food consumption play a crucial role in shaping their intentions to buy. Factors such as self-efficacy, perceived barriers, and perceived ease of making healthier food choices may influence students' perceived behavioral control and subsequently impact their buying intentions.

5. IMPLICATIONS AND FUTURE RESEARCH

Given the significant influence of subjective norms and perceived behavioural control on buying intentions at fast-food establishments, interventions aimed at encouraging healthier food choices among students must incorporate strategies that address social influences and enhance students' ability to make informed dietary decisions. Educational programs should not only raise awareness about the impact of social norms on food choices but also provide students with the necessary skills and resources to overcome barriers to healthier eating. For example, universities and public health organizations could implement peer-led nutrition campaigns, interactive workshops, and digital tools that facilitate healthier decision-making in fast-food settings.

Implications for menu labelling policies

The limited impact of attitudes toward nutrition labelling on purchasing intentions suggests that providing nutritional information alone may not be sufficient to influence consumer behaviour. This finding highlights the need for a more integrated approach that combines menu labelling with behavioural nudges, visual cues, and consumer education to improve its effectiveness. Policymakers and food establishments should consider initiatives such as:

- Simplified and intuitive labelling (e.g., color-coded labels, star ratings, or traffic-light systems) to make nutritional information more accessible and actionable.
- Prominent menu placement of healthier options, along with brief educational messages encouraging informed choices.

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- Social and behavioural interventions, such as discounts or incentives for healthier choices, to reinforce the impact of menu labelling.
  These combined strategies can help bridge the gap between information provision and behavioral change, ultimately fostering healthier food selection habits.

Implications for addressing peer influence

The strong role of subjective norms underscores the power of peer influence in shaping students' eating behaviors. This insight suggests that interventions aimed at promoting healthier eating habits should leverage peer networks and social dynamics. Potential strategies include:

- Peer-driven nutrition advocacy programs, where student ambassadors promote healthy eating habits through campus initiatives, social media campaigns, and interactive challenges.
- Group-based interventions, such as meal-planning activities, peer-led cooking demonstrations, and campus-wide healthy eating pledges, to encourage collective commitment to nutritious food choices.
- Gamification and social rewards, such as point-based systems for choosing healthier meals or competitions between student groups, to encourage sustainable dietary behaviors.
  By embedding these strategies within student communities, healthier eating norms can become more deeply ingrained and socially reinforced.

Future research directions

To build on these findings and further refine interventions, future research should explore the following avenues:

Longitudinal Studies: Long-term research tracking changes in students' dietary behaviours and purchasing intentions over time would provide deeper insights into how social influences and perceived behavioural control evolve. Such studies can assess whether interventions produce sustained changes or if additional reinforcement is needed.

Qualitative Research: In-depth qualitative studies could explore students' underlying motivations, perceptions, and barriers related to fast-food consumption. Focus group discussions and interviews can reveal contextual factors influencing decision-making and offer valuable perspectives for designing targeted interventions.

Experimental Designs: Controlled experimental studies could test the effectiveness of various intervention strategies, such as peer-led nutrition programs, menu labelling enhancements, and digital tools for informed decision-making. Experimental findings would provide empirical evidence on the most impactful approaches to improving students' dietary behaviours.

6. CONCLUSION

This study provides critical insights into the factors influencing purchasing intentions at fast-food establishments among UiTM Pulau Pinang students, aligning with Sustainable Development Goal 3 (SDG 3) to promote good health and well-being. While attitudes toward nutrition labelling appear to have a limited direct effect on buying intentions, subjective norms and perceived behavioral control play a substantial role. These findings highlight the need for interventions that go beyond informational approaches and instead focus on leveraging social influence and enhancing students' confidence in making healthier food choices.

By integrating behavioral insights into policy-making and intervention design, universities, policymakers, and the foodservice industry can create an environment that encourages better dietary decisions. Future research should continue exploring innovative strategies to reinforce positive eating behaviors and assess

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their long-term impact on student health. Ultimately, fostering a culture of informed and health-conscious decision-making will contribute to improved dietary behaviors and overall well-being among young consumers.

7. AUTHORS' CONTRIBUTIONS

Nur Haziqah Anuar contributed to conceptualization, methodology, formal analysis, investigation, and original draft writing. **Norrina Din** provided conceptualization, supervision, validation, review, and editing of the manuscript. All authors reviewed and approved the final version.

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