

‘Kafeteria Sihat’: investigating the role of perceived benefits and perceived value towards customers’ behavioural intention in Malaysian healthcare institutions

^{1,*} Abdul Rais, A.R., ¹ Jaafar, S.N., ² Chemah, T.C., ² Raja Puteri Saadiah, R.A. and ³ Mohd Shahrir, A.R.

¹ Faculty of Fisheries and Food Science, Universiti Malaysia Terengganu, Kuala Nerus 21030, Terengganu, Malaysia

² Faculty of Hotel and Tourism Management, UiTM Selangor, Puncak Alam Campus, Selangor Darul Ehsan, Malaysia

³ Department of Dietetics and Catering, Hospital Permai, Persiaran Kempas Baru, 81200 Johor Bharu, Malaysia

Article history:

Received: 28 February 2024

Received in revised form: 3 April 2024

Accepted: 13 July 2024

Available Online: 2 July 2025

Keywords:

Healthy cafeteria,
Perceived benefits,
Perceived value,
Behavioural intention

DOI:

[https://doi.org/10.26656/fr.2017.9\(4\).050](https://doi.org/10.26656/fr.2017.9(4).050)

Abstract

‘Kafeteria Sihat’ is an intervention program that serves the purpose of cultivating healthy eating practices away from home. Studies relating to health products and health-related services have often explored the significance of perceived benefits and perceived value to customer behavioural intention. This study aimed to investigate the potential inter-relationship between perceived benefits (health, food quality, financial savings, and convenience) and behavioural intention among customers through the mediation of perceived value. A total of 401 questionnaires were collected at ‘Kafeteria Sihat’ from two major public hospitals in the state of Terengganu. Data were analysed using the Structural Equation Model (SEM) to examine the causal and mediating effects. Hospital staff slightly outnumber the visitors dining at the ‘Kafeteria Sihat’ whereby the majority of the respondents are of working-class age, attained tertiary qualification and female respondents involved more than male respondents in this study. Findings suggested that health of not having a significant impact ($H_{1.1}$: $\beta = -0.008$, t -value = -0.136 , p -value = 0.892); food quality ($H_{1.2}$: $\beta = 0.220$, t -value = 3.229 , p -value = 0.001), and convenience ($H_{1.4}$: $\beta = 0.074$, t -value = 2.687 , p -value = 0.021) having a positive impact; financial savings having a negative impact towards behavioural intention ($H_{1.3}$: $\beta = -1.087$, t -value = -2.994 , p -value ≤ 0.003). The mediation of perceived value was found to improve the causal effect of all four subdimensions of perceived benefits towards behavioural intention (R^2 : 0.817^{***}). Strategizing food pricing practices, diversifying health-related services at ‘Kafeteria Sihat’ and emphasising the importance of perceived value would have the potential to sustain a well as broader implementation in other public institutions.

1. Introduction

The prevalence of obesity and non-communicable diseases (NCD) continues to rise globally (Burgoiné *et al.*, 2014; Jilcott Pitts *et al.*, 2018) often associated with consuming meals away from home, which are commonly less healthy (Sahud *et al.*, 2006; Yoon and George, 2012; Wu and Sturm, 2014; Tarro *et al.*, 2017; Onufrak *et al.*, 2019). Workplace cafeterias, including those in healthcare institutions, are often criticized for not upholding a positive image of practising healthy eating by allowing the sale of fast food (Lesser *et al.*, 2012; Lederer *et al.*, 2014; Harel *et al.*, 2015).

Through the implementation of healthy cafeteria intervention programs, government health agencies have been able to take appropriate steps in promoting the importance of healthy food consumption practices away from home (Dawson *et al.*, 2006; Donohoe Mather and McGurk, 2014; Moran *et al.*, 2016). This is achieved through a number of strategies including three-coloured food labelling, stealth marketing, special price incentives, frequent customer programs, and food shelf manipulations (van Kleef *et al.*, 2012; Thorndike *et al.*, 2014; Lindeman *et al.*, 2016; Patsch *et al.*, 2016; Thorndike *et al.*, 2016; Chan *et al.*, 2017). In Malaysia, the healthy cafeteria program is known as ‘Kafeteria

*Corresponding author.

Email: a.rais@umt.edu.my

Sihat', which aims to improve food quality and promote healthy eating practices in cafeteria premises, beginning with public healthcare facilities (Ministry of Health Malaysia, 2016a, 2016b).

To receive the 'Kafeteria Sihat' certification, cafeteria operators must fulfil a number of standards set by the Ministry of Health Malaysia, Malaysia (Ministry of Health Malaysia, 2016a). These requirements involve offering a minimum of three choices of vegetables, two choices of grain-based food, two choices of protein-based food, two choices of fresh fruits, and one legume-based food. Food is highly encouraged to be prepared using stir-fry, baking, steaming, boiling, and grilling. Moreover, food calorie labels, health-related posters, pamphlets, as well as the presence of a health corner which provides a weight and height measurement scale, are displayed to facilitate balanced meal selection and monitor the ideal body mass index (BMI).

Besides investigating purely from a nutritional or clinical perspective, studies relating to health-enhanced food products, as well as patronizing health-beneficial facilities, have also attempted to measure customer behavioural intention, mainly by adapting from the Theory of Planned Behaviour (Han and Hwang, 2013; Dorce *et al.*, 2021; Chen *et al.*, 2022). A similar approach has also been taken by studies relating to commercial food services (Mathur and Gupta, 2019; Pérez-Villarreal *et al.*, 2020; Loh and Hassan, 2021). Moreover, these studies share common predictor variables regarding consumer-perceived benefits, namely food quality, financial savings, and convenience for customers. Studies related to medical tourism as well as functional food have also incorporated health as a subdimension of perceived benefits (Darian and Tucci, 2011; Han and Hwang, 2013; Chen *et al.*, 2022). Findings from each study vary in terms of the direct causal impact each

dimension of perceived benefits would have on behavioural intention. In certain contexts, the causal effect of perceived benefit can only be achieved through the mediation of perceived value (Han and Hwang, 2013).

Previously, 'Kafeteria Sihat' related studies have focused more on understanding customer retention through the mediation of eating behaviour and satisfaction (Abdul Rais *et al.*, 2019; Abdul Rahman *et al.*, 2020). A clearer understanding of how perceived benefits and perceived value function in affecting behavioural intention is useful in assessing the sustainability of the 'Kafeteria Sihat' program and key beneficial aspects that need to be emphasized in order to achieve the long-term goal of producing a healthy society. Therefore, the aim of this paper was to investigate the potential inter-relationship between perceived benefits (health, food quality, financial savings, and convenience) as the independent variable, perceived value as the mediating variable, and customer behavioural intention as the dependent variable.

Upon reviewing the relevant literature, the dependent variable of this study is the customer's behavioural intention; the predictors are health, food quality, financial savings and convenience. Meanwhile, the perceived value functions as the sole mediating variable. Figure 1 illustrates the proposed framework for this study which was adapted from Han and Hwang (2013). From the model, the following hypotheses were formulated:

H_{1.1} Health has a significant impact on behaviour intention.

H_{1.2} Food quality has a significant impact on behaviour intention.

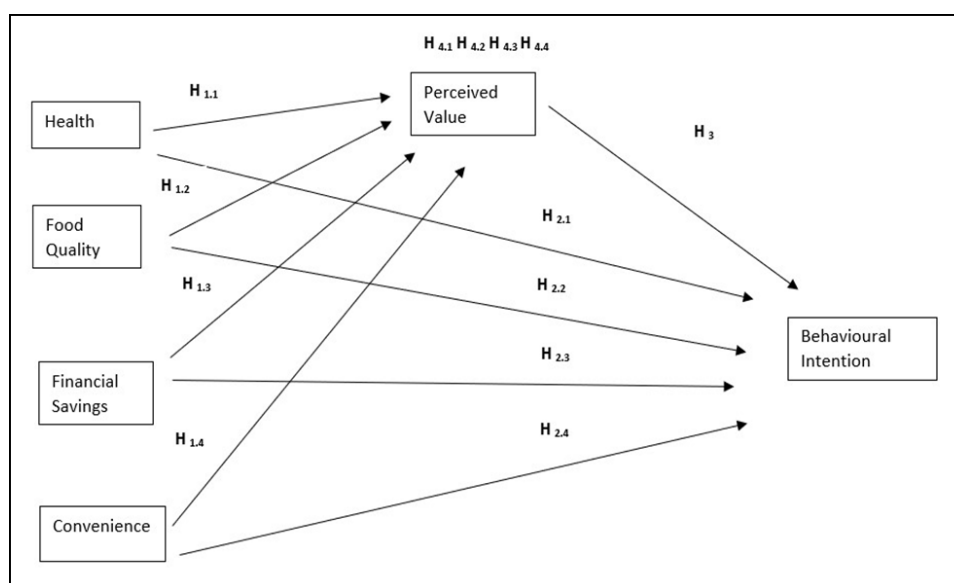


Figure 1. Proposed model. Source: Adapted from Han and Hwang (2013).

H_{1.3} Financial saving has a significant impact on behaviour intention.

H_{1.4} Convenience has a significant impact on behaviour intention.

H_{2.1} Health has a significant impact on perceived value.

H_{2.2} Food Quality has a significant impact on perceived value.

H_{2.3} Financial saving has a significant impact on perceived value.

H_{2.4} Convenience has a significant impact on perceived value.

H₃ Perceived value has a significant impact on behaviour intention.

H_{4.1} Perceived value mediates the relationship between health and behaviour intention.

H_{4.2} Perceived value mediates the relationship between food quality and behaviour intention.

H_{4.3} Perceived value mediates the relationship between financial and behaviour intention.

H_{4.4} Perceived value mediates the relationship between convenience and behaviour intention.

2. Materials and methods

2.1 Study design

This study uses a quantitative approach through a cross-sectional study involving self-administered online questionnaires at 2 public hospitals in Kuala Terengganu and Kemaman since these 2 hospitals were the only healthcare facilities in Terengganu with specialist centres and would have the most crowd volume compared to other rural hospitals. At the time of the survey, Malaysia was still imposing strict COVID-19 standard operating procedures which restricts face-to-face interaction. Therefore, assistance from the hospital research department was requested in disseminating information about the survey and displaying QR codes at the respective cafeteria hospital payment counters for customers to participate. Permission and ethical clearance were obtained from the Ministry of Health Malaysia before administering the survey from early November 2021 until late February 2022. A total of 401 completed questionnaires were collected which falls within the suggested sample range guideline by Sudman (1976) and Roscoe (1975) suggesting a sample population between 200-500 participants for a regional study. Tokens of appreciation were given in the form of petrol gift vouchers.

2.2 Questionnaire structure

The proposed survey questionnaire is divided into four major sections. Each section contained items addressing each construct. These items were self-developed as well as adapted from past studies relating to healthy cafeteria (Abdul Rais *et al.*, 2019) as well as items relating to perceived benefits, perceived value and behaviour intention within the context of hospitality industry (Han and Hwang, 2013; Ing *et al.*, 2019; Chitthanom, 2020; Pérez-Villarreal *et al.*, 2020; Tran and Le, 2020) and health product consumerism (Singh and Verma, 2017; Tandon *et al.*, 2020; Dorce *et al.*, 2021). Section A comprises of respondent's demographic profile such as age, gender, education level, the frequency of visiting hospitals and occupation. Section B comprises items relating to the independent variables focusing on the perceived benefits which are represented by health (7 items), food quality (10 items), financial savings (7 items) and convenience (7 items). Section C consists of 6 items to measure the perceived value as the mediating variable. Lastly, Section D comprises 7 items relating to behavioural intention as the dependent variable. The seven-point Likert scale is used in measuring items in all constructs from section B to D ranging from 1 = strongly disagree to 7 = strongly agree. Summary of items are summarized in Table 1.

2.3 Statistical analysis

Analysis was executed in SPSS version 25 using frequency test, and descriptive statistics. To test the proposed hypotheses, the data will be further analysed in AMOS version 25 using confirmatory factor analysis (CFA) and Structural Equation Modelling (SEM). All these tests applied will provide information that describes a set of factors in a situation or establish the goodness of measures and fulfil the objectives of the study. The mediating test was done using the PROCESS test of mediation (Hayes, 2013).

3. Results and discussion

3.1 Demographic profile

The respondents' demographic profiles were compiled in Table 2 consisting of 6 demographic categories which are customer category, age groups, gender, ethnicity, educational background, and occupation. It is summarized that: hospital staff slightly outnumber the visitors dining at the 'Kafeteria Sihah'; the majority of the respondents are of working-class age; a slightly larger proportion of female respondents compared to male; most respondents have a tertiary qualification.

Table 1. Questionnaire items.

Code	Items
Health	
H1	I believe the food served at 'Kafeteria Sihat' helped me to lose weight.
H2	I believe that food at 'Kafeteria Sihat' helps me to prevent disease.
H3	I believe food at 'Kafeteria Sihat' will not cause me illness.
H4	I believe food at 'Kafeteria Sihat' is good for my health.
H5	I believe 'Kafeteria Sihat' serves a healthy and balanced diet.
H6	I believe that food at 'Kafeteria Sihat' help me to meet my nutritional needs.
H7	I believe that the calories displayed on each food at 'Kafeteria Sihat' enable me to consume the appropriate food quantity.
Food quality	
F1	I believe the food served at 'Kafeteria Sihat' is presented in a pleasant appearance.
F2	I believe the food served at the 'Kafeteria Sihat' tastes good.
F3	I believe the ingredients used at 'Kafeteria Sihat' are good quality.
F4	I believe food at 'Kafeteria Sihat' is served at the appropriate temperature.
F5	I believe 'Kafeteria Sihat' offers a variety of healthy dishes on the menu.
F6	I believe the food served at 'Kafeteria Sihat' is nutritious.
F7	I believe the food served at 'Kafeteria Sihat' has a good quality that is maintained throughout.
F8	I believe food at 'Kafeteria Sihat' is portioned in appropriate quantity.
F9	I believe the smell of food presented at 'Kafeteria Sihat' stimulates appetite.
F10	I believe food at 'Kafeteria Sihat' is hygienically prepared and served.
Financial saving	
S1	'Kafeteria Sihat' offers food at a reduced price.
S2	I receive good quality food in 'Kafeteria Sihat' at a reduced price.
S3	Reflecting on the price of food in 'Kafeteria Sihat', I feel that my expenses are saved.
S4	'Kafeteria Sihat' serves me healthier food at a lower price compared to other food premises.
S5	'Kafeteria Sihat' offers similar food at a much lower price than nearby food premises.
S6	Dining at 'Kafeteria Sihat' is a good way to control my expenses.
S7	'Kafeteria Sihat' gave me good value for money compared to other food premises.
Convenience	
C1	Dining at 'Kafeteria Sihat' is convenient because of the relatively short distance between the hospital and the cafeteria.
C2	Dining at 'Kafeteria Sihat' reduces the time and effort needed to find nearby food premises.
C3	Dining at 'Kafeteria Sihat' is convenient because of the prompt service by staffs.
C4	Dining at 'Kafeteria Sihat' is convenient because of the pleasant communication with competent staff.
C5	Dining at 'Kafeteria Sihat' is convenient because of the short queue time when choosing the food.
C7	'Kafeteria Sihat' provide enough tables and chairs for customers.
C8	Dining at 'Kafeteria Sihat' is convenient because the cafeteria is clean.
Perceived value towards 'Kafeteria Sihat'	
V1	I dine at 'Kafeteria Sihat' because the cafeteria offers food at a reduced price.
V2	I dine at 'Kafeteria Sihat' because the overall value of dining at the cafeteria was high.
V3	I dine at 'Kafeteria Sihat' because the dining experience at the cafeteria was worth the money.
V4	I dine at 'Kafeteria Sihat' because the food quality at the cafeteria was worth the value.
V5	I dine at 'Kafeteria Sihat' because I gain a substantial health benefit through dining at the cafeteria.
V6	I dine at 'Kafeteria Sihat' because it makes my routine at the hospital very convenient.
Behavioural intention	
P1	I would like to revisit 'Kafeteria Sihat' again when I come back to the hospital.
P2	I would recommend 'Kafeteria Sihat' to my associates.
P3	I would talk about my good experience dining at 'Kafeteria Sihat' to my associates.
P4	I would more frequently dine at 'Kafeteria Sihat' when I am at the hospital.
P5	I would practice healthy eating habits that I learn at 'Kafeteria Sihat' when I eat elsewhere.
P6	I would consider visiting another 'Kafeteria Sihat' if I visit another public hospital.
P7	I would consider visiting another healthy cafeteria similar to the 'Kafeteria Sihat' concept elsewhere.

Table 2. Respondent profile.

	Frequency (n)	Percentage (%)
Customer category		
Visitor	168	41.90%
Hospital Staff	233	58.10%
Age groups		
Under 25 years old	72	18%
26 to 35 years old	136	33.90%
36 to 45 years old	136	33.90%
46 to 55 years old	49	12.20%
Above 56 years old	8	2.00%
Gender		
Male	186	46.40%
Female	215	53.60%
Ethnicity		
Malay	300	74.80%
Chinese	80	20.00%
Indian	21	5.20%
Education background		
Secondary school	108	18.90%
Certificate	22	3.90%
Diploma	136	23.9%
Bachelor's degree	288	50.50%
Masters/PhD	16	2.80%
Occupation		
Government servant	257	64.00%
Private sector	68	17.00%
Self-employed	46	11.50%
Students	30	7.50%

3.2 Measurement model

The result of the measurement model for perceived benefits (health, food quality, financial saving, convenience), perceived value, and behaviour intention constructs was statistically significant with a p-value of less than 0.001. The entire critical ratios associated with each item in the scale were significantly greater than 1.96 at 0.05 levels or 0.01 levels respectively. The Cronbach's alpha α for all constructs ranged from .908 to .974 which is well above the stipulated threshold level of acceptance reliability (Nunnally, 1978). The Average Variance Extracted (AVE) value recorded ranged from 0.496 to 0.914 while Composite Reliability was between 0.871 to 0.977 thus meeting the minimum threshold (Fornell and Bookstein, 1982). Table 3 showcases the values of all indices for the overall measurement model for this study.

The chi-square degree of freedom (χ^2/df) recorded a value of 4.350. Meanwhile, the Root Mean Square Residual (RMR) value was recorded at 0.075. With the GFI (0.790), IFI (0.837) and CFI (0.935) suggested that the hypothesized model has a satisfactory fit even though

Table 2. Respondent profile.

Measures	Measurement model	Threshold values
χ^2	996.262	
Df	229	
p -value	<0.0001	
χ^2/df	4.35	Less than 5
RMR	0.075	Nearer to 0 the better
GFI	0.79	0.900 and above
IFI	0.837	0.900 and above
CFI	0.95	0.900 and above
RMSEA	0.092	Between 0.03 and 0.08

the value of Goodness of Fit index (GFI) is below 0.900. Lastly, the Root Mean Square Error of Approximation (RMSEA) was recorded at 0.092 which is considered marginal. All the indices were within the marginal threshold for a good model fit (Steiger, 2007; Tabachnick and Fidell, 2007; Diamantopoulos *et al.*, 2008). Thus, the hypotheses model is fit to qualify for the next crucial step in SEM which is a structural model evaluation.

3.3 Structural path analysis

The summary structural paths in the hypotheses model are further illustrated in Table 4. Results from $H_{1.1}$ showed an insignificant relationship between health and customer behaviour intention ($H_{1.1}$: $\beta = -0.008$, t-value = -0.136, p-value = 0.892), thus rejecting the $H_{1.1}$. Meanwhile, it was observed that food quality ($H_{1.2}$: $\beta = 0.220$, t-value = 3.229, p-value = 0.001), and Convenience ($H_{1.4}$: $\beta = 0.074$, t-value = 2.687, p-value = 0.021) had a positive causal effect towards customer behaviour intention. On the other hand, financial savings ($H_{1.3}$: $\beta = -1.087$, t-value = -2.994, p-value = <0.003) was found to have a negative causal effect towards customer behaviour intention.

A similar pattern of findings was also reported for H_2 in which health did not have a significant impact on perceived value thus rejecting $H_{2.1}$ ($H_{2.1}$: $\beta = 0.85$, t-value = 1.351, p-value = 0.177). However, food quality ($H_{2.2}$: $\beta = 0.230$, t-value = 3.329, p-value ≤ 0.001), financial savings $H_{2.3}$: $\beta = 0.609$, t-value = 13.280, p-value ≤ 0.001) and Convenience ($H_{2.4}$: $\beta = 0.174$, t-value = 2.687, p-value = 0.007) had positive causal effect towards customer behavioural intention thus affirming $H_{2.2}$, $H_{2.3}$ and $H_{2.4}$.

Although the theme of 'Kafeteria Sihat' is offering healthy food, customers may not perceive the food to be fully health-beneficial. Consuming organic (Singh and Verma, 2017; Dorce *et al.*, 2021) or functional food (Temesi *et al.*, 2019; Wang and Tsai, 2019; Huang *et al.*, 2020; Chen *et al.*, 2022) which are often perceived as

Table 4. Summary of results for structural path analysis

No	Structural path	B (beta)	Standardized error	Critical ratio (t-value)	Results	p
H _{1.1}	Health → Behaviour Intention	-0.008	0.061	-0.136	Not supported	0.892
H _{1.2}	Food Quality → Behaviour Intention	0.220	0.068	3.229	Supported	<0.001***
H _{1.3}	Financial saving → Behaviour Intention	-0.165	0.055	-2.994	Supported	0.003
H _{1.4}	Convenience → Behaviour Intention	0.174	0.069	2.687	Supported	0.021
H _{2.1}	Health → Perceived Value	0.085	0.063	1.351	Not supported	0.177
H _{2.2}	Food Quality → Perceived Value	0.230	0.069	3.329	Supported	<0.001***
H _{2.3}	Financial saving → Perceived Value	0.609	0.046	13.280	Supported	<0.001***
H _{2.4}	Convenience → Perceived Value	0.174	0.065	2.687	Supported	0.007
H ₃	Perceived Value → Behaviour Intention	0.846	0.059	14.250	Supported	<0.001***

health beneficial and would often trigger causal effect towards purchase intention. However, this may not be applicable to 'Kafeteria Sihat' as the food sold is mostly local staple food that has either undergone recipe modification or sold in smaller portion sizes in order to limit caloric intake (Abdul Rais *et al.*, 2019; Abdul Rahman *et al.*, 2020). It should also not be ignored that a limited number of comfort foods are still being sold in the hospital cafeteria. Darian and Tucci (2011) posed that offering food mainly high in nutritional value would have a high tendency to trigger healthy food purchase intention. Healthy cafeteria studies focusing on nutritional aspects have argued that worksite cafeterias have little to no effect on weight gain prevention (French, 2010; LaCaille *et al.*, 2016; Abdul Rais *et al.*, 2022). Health benefits of healthy cafeteria intervention were only observed in improving walking activity, nutritional knowledge, peer health discussions, and positive attitudes were apparent (LaCaille *et al.*, 2016; McCurley *et al.*, 2019). Though 'Kafeteria Sihat' does provide a health corner, these sections are often criticised for having faulty weighing scales and ripped-out posters, thus hampering the potential benefits with regards to health monitoring (Abdul Rahman *et al.*, 2020).

Findings relating to food quality and convenience affecting behavioural intention are in line with previous studies relating to commercial food service settings (Mathur and Gupta, 2019; Pérez-Villarreal *et al.*, 2020; Loh and Hassan, 2021) as well as in medical tourism hospitality services (Han and Hwang, 2013). Food quality is often one of the strongest factor (Sulek and Hensley, 2004; Edwards and Meiselman, 2005; Othman *et al.*, 2012; Kong and Mohd Jamil, 2014; Abdul Rahman *et al.*, 2020) in terms of influencing customers intention to eat, satisfaction of eating as well potential of patronization (Chang *et al.*, 2014; Thomas *et al.*, 2016; Abdul Rais *et al.*, 2019) in any foodservice establishment. Accessibility to food premises and related hospitality services is crucial (Han and Hwang, 2013; Loh and Hassan, 2021) for healthcare workers attending

to patients as well as visitors accompanying someone seeking medical treatment. Having 'Kafeteria Sihat' would enable both hospital staff and visitors to have quick access to wholesome meals without having to spend extra time commuting from the hospital to outside eateries and risk wasting time securing parking spaces or missing medical appointments (Abdul Rahman *et al.*, 2020). It also has the advantage over outside eateries which often lack options for healthy food choices or miss important food safety-related certifications that can ensure trust similar to eateries using brand names (Jun *et al.*, 2017).

With regards to financial saving, the negative relationship suggests that 'Kafeteria Sihat' customers would be a bit discouraged to re-patronize if they perceived buying certain meals to be costly. One of the biggest challenges in offering healthy menus is they are costlier compared to normal menus (Tamrakar *et al.*, 2020) as operators tend to face obstacles in selecting suitable food suppliers due to limited options (Lederer *et al.*, 2014; Jilcott Pitts *et al.*, 2016). This is applicable for all profit and non-profit food service establishments including hospital cafeterias. One possible initiative which could be implemented to promote a healthy menu in hospital cafeterias is to introduce policies that offer special subsidies for healthier food options and in turn could boost purchases and consumption (Kahn-Marshall and Gallant, 2012; Abdul Rais *et al.*, 2022). Implementing price discounts and point rewards system on selected healthy menus in hospital cafeterias would also have huge potential to boost sales as high as 28% (Patsch *et al.*, 2016; Thorndike *et al.*, 2016; Chan *et al.*, 2017)

3.4 Mediating tests

The mediation tests for hypotheses H_{4.1}, H_{4.2}, H_{4.3} and H_{4.4} were administered using a special PROCESS menu (Hayes, 2013) in SPSS. It utilizes the classic mediation concept in which X significantly predicts Y (total effect) and the indirect effect (ab) is significant.

Table 5. Mediating test.

Hypotheses Tested	Path	Relationship	Result	Bootstrapping result	
				LL 95 CI	UL 95 CI
$H_{4.1}$ Perceived value mediates the relationship between health and Behaviour Intention	Path a	Effect of Health on Perceived Value	0.7668***	0.8107	0.9562
	Path b	Effect of Perceived Value on Behaviour Intention	0.056**	0.015	0.096
	Path c	Effect of Health on Behaviour Intention	0.808***	0.748	0.868
	Path c'	Effect of Health on Behaviour Intention mediated by Perceived Value	0.817***	0.757	0.876
$H_{4.2}$ Perceived value mediates the relationship between food quality and Behaviour Intention	Path a	Effect of Food Quality on Perceived Value	0.114*	0.090	0.346
	Path b	Effect of Perceived Value on Behaviour Intention	0.071**	0.020	0.122
	Path c	Effect of Food Quality on Behaviour Intention	0.424***	0.368	0.479
	Path c'	Effect of Food Quality on Behaviour Intention mediated by Perceived Value	0.432***	0.376	0.487
$H_{4.3}$ Perceived value mediates the relationship between financial and Behaviour Intention	Path a	Effect of Financial on Perceived Value	0.124*	0.027	0.221
	Path b	Effect of Perceived Value on Behaviour Intention	0.074**	0.022	0.127
	Path c	Effect of Financial on Behaviour Intention	0.430***	0.368	0.492
	Path c'	Effect of Financial on Behaviour Intention mediated by Perceived Value	0.439***	0.377	0.501
$H_{4.4}$ Perceived value mediates the relationship between Convenience and Behaviour Intention	Path a	Effect of Convenience on Perceived Value	0.154**	0.052	0.256
	Path b	Effect of Perceived Value on Behaviour Intention	0.045*	0.005	0.086
	Path c	Effect of Convenience on Behaviour Intention	0.675***	0.624	0.726
	Path c'	Effect of Convenience on Behaviour Intention mediated by Perceived Value	0.682***	0.631	0.732

Mediation analyses using bootstrapping of Preacher and Hayes (2004; 2008).

The mediation test can be explained by path c' (path c' = c + ab). The result of the mediation tests was compiled in Table 5.

The path between health and behavioural intention is significant with a standardized coefficient of .808***, and the same pattern appeared between perceived value and behavioural intention with (β : 0.056**). The proposition that perceived value mediated the relationship between health and behavioural intention is proven with an indirect effect of 0.817***. This indicates that perceived value has a strong indirect effect on the relationship between health and behaviour intention. Similar strong mediating effects of perceived value towards food quality, financial savings and convenience were also observed. Thus $H_{4.1}$, $H_{4.2}$, $H_{4.3}$ and $H_{4.4}$ were all supported. Findings reflect the pattern of previous studies relating to commercial food services (Mathur and Gupta, 2019) as well as medical tourism services (Han and Hwang, 2013). As contented by Abdul Rais *et al.* (2019), the causal effect between 'Kafeteria Sihat' and re-patronization is only possible through the mediation of eating behaviour and satisfaction.

It was discovered that the mediation of perceived value will have a strong effect on health, food quality, financial savings and convenience towards behavioural intention. This suggests that in a hospital cafeteria, the

perceived value of health benefits associated with food choices is paramount. If visitors and staff perceive certain menu items as nutritious, low in unhealthy ingredients like trans fats or excessive sugars, and beneficial for their overall health, they are more likely to intend to choose those options. For example, offering fresh salads with a variety of colourful vegetables, lean proteins, and whole grains can be perceived as healthier choices, leading to increased intentions to purchase and consume them. In summary, leveraging the concept of perceived value mediation in a hospital cafeteria involves emphasizing the health benefits, food quality, financial savings, and convenience associated with healthier food choices. By understanding and addressing these factors, hospital cafeterias can effectively promote and encourage healthier eating behaviours among visitors and staff.

4. Conclusion

The findings of this study suggest that food quality, as well as convenience, can have a positive causal effect while financial saving would have a negative causal effect towards behavioural intention. Meanwhile, health was found not to have any causal effect on behavioural intention. It is only through the mediation of perceived value that all four dimensions of perceived benefit were able to have a strong causal effect towards behavioural

intention. Proper subsidies and pricing incentives towards healthy menus, will create the potential of boosting healthy food sales and consumption. Wider healthy menu offerings, as well as health-related services, would gradually improve people's perceived health benefits of dining at 'Kafeteria Sihat'. The function of the health corner could further be revamped by investing in a better-grade weighing machine or having interaction sessions during certain periods with nutritionists would help educate 'Kafeteria Sihat' patrons on the importance of healthy eating. Operators and the Ministry of Health Malaysia should regard perceived value as a vital concept to enhance the behavioural intention of 'Kafeteria Sihat'. A better understanding of this concept, will enable steady improvement of the implementation of 'Kafeteria Sihat' beyond the boundaries of public healthcare facilities.

Conflict of interest

The authors declare no conflict of interest.

Acknowledgements

The authors would like to thank Universiti Malaysia Terengganu for providing funding for this project through the TAPE-RG grant number 55289 as well as the Ministry of Health Malaysia, Malaysia for releasing ethical clearance for this project (NMRR-21-1812-60900).

References

- Abdul Rahman, A.R., Zahari, M.S.M. and Tamby Chik, C. (2020). 'Kafeteria Sihat' initiative in Malaysian public hospitals: Do customers accept it? *Journal of Foodservice Business Research*, 23(1), 57-77. <https://doi.org/10.1080/15378020.2019.1679064>
- Abdul Rais, A.R., Zahari, M.S.M., Chik, C.T. and Hanafiah, M.H. (2019). Re-patronization at hospital healthy cafeterias: what does it take for the occurrence? *British Food Journal*, 121(8), 1763-1781. <https://doi.org/10.1108/BFJ-01-2019-0044>
- Abdul Rais, A.R., Zakaria, N.S. and Jaafar, S.N. (2022). Hospital healthy cafeteria initiatives: a systematic review of consumer behaviour related studies. *Food Research*, 6(5), 183-198. [https://doi.org/10.26656/fr.2017.6\(5\).535](https://doi.org/10.26656/fr.2017.6(5).535)
- Burgoine, T., Forouhi, N.G., Griffin, S.J., Wareham, N.J. and Monsivais, P. (2014). Associations between exposure to takeaway food outlets, takeaway food consumption, and body weight In Cambridgeshire, UK: population based, cross sectional study. *BMJ*, 348, g1464. <https://doi.org/10.1136/bmj.g1464>
- Chan, E.K., Kwortnik, R. and Wansink, B. (2017). McHealthy How Marketing Incentives Influence Healthy Food Choices. *Cornell Hospitality Quarterly*, 58(1), 6-22. <https://doi.org/10.1177/1938965516668403>
- Chang, M.L.D., Suki, N.M. and Nalini, A. (2014). A structural approach on students' satisfaction level with university cafeteria. *Asian Social Science*, 10 (18), 202-209.
- Chen, Y.H., Chao, S.L. and Chu, Y.W. (2022). Effects of Perceived Benefit on Vitamin D Supplementation Intention: A Theory of Planned Behaviour Perspective. *International Journal of Environmental Research and Public Health*, 19(4), 1952. <https://doi.org/10.3390/ijerph19041952>
- Chitthanom, C. (2020). Relationships among medical activity perceived functional values, satisfaction trust, and revisit intention in medical tourism: A case study on CLMV tourists in Thailand. *ABAC Journal*, 40(3), 54-77.
- Darian, J.C. and Tucci, L. (2011). Perceived health benefits and food purchasing decisions. *Journal of Consumer Marketing*, 28(6), 421-428. <https://doi.org/10.1108/073637611111165930>
- Diamantopoulos, A., Riefler, P. and Roth, K.P. (2008). Advancing formative measurement models. *Journal of Business Research*, 61(12), 1203-1218.
- Donohoe Mather, C.M. and McGurk, M.D. (2014). Insights in public health: Promoting healthy snack and beverage choices in Hawai'i worksites: the Choose Healthy Now! pilot project. *Hawai'i Journal of Medicine and Public Health: a Journal of Asia Pacific Medicine and Public Health*, 73(11), 365-370.
- Dorce, L.C., da Silva, M.C., Mauad, J.R.C., de Faria Domingues, C.H. and Borges, J.A.R. (2021). Extending the theory of planned behavior to understand consumer purchase behavior for organic vegetables in Brazil: The role of perceived health benefits, perceived sustainability benefits and perceived price. *Food Quality and Preference*, 91, 104191. <https://doi.org/10.1016/j.foodqual.2021.104191>
- Edwards, J.S.A. and Meiselman, H.L. (2005). The influence of positive and negative cues on restaurant food choice and food acceptance. *International Journal of Contemporary Hospitality Management*, 17(4), 332-344. <https://doi.org/10.1108/09596110510597598>
- Fornell, C. and Bookstein, F.L. (1982). Two structural equation models: LISREL and PLS applied to

- consumer exit-voice theory. *Journal of Marketing Research*, 19(11), 440-452.
- French, S.A. (2010). 11 Population approaches to promote healthful eating behaviours. In Crawford, D., Jeffrey, R.W., Ball, K. and Brug, J. (Eds.) *Obesity Epidemiology: From Aetiology to Public Health*, 2nd ed., p. 161-185). UK: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199571512.003.0011>
- Han, H. and Hwang, J. (2013). Multi-dimensions of the perceived benefits in a medical hotel and their roles in international travelers' decision-making process. *International Journal of Hospitality Management*, 35, 100-108. <https://doi.org/10.1016/j.ijhm.2013.05.011>
- Harel, Z., Goldberg, H., Harel, S., Cram, P. and Bell, C.M. (2015). The prevalence and characteristics of fast food outlets in Ontario hospitals. *Public Health*, 129(9), 1294-1296. <https://doi.org/10.1016/j.puhe.2015.03.017>
- Hayes, A.F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-based Approach*. New York, USA: Guilford Press.
- Huang, L., Bai, L. and Gong, S. (2020). The effects of carrier, benefit, and perceived trust in information channel on functional food purchase intention among Chinese consumers. *Food Quality and Preference*, 81, 103854. <https://doi.org/10.1016/j.foodqual.2019.103854>
- Ing, P.G., Zheng Lin, N., Xu, M. and Thurasamy, R. (2019). Customer loyalty in Sabah full service restaurant. *Asia Pacific Journal of Marketing and Logistics*, 32(7), 1407-1429. <https://doi.org/10.1108/apjml-07-2019-0437>
- Jilcott Pitts, S., Schwartz, B., Graham, J., Warnock, A.L., Mojica, A., Marziale, E. and Harris, D. (2018). Best Practices for Financial Sustainability of Healthy Food Service Guidelines in Hospital Cafeterias. *Preventing Chronic Disease*, 15, 170477. <https://doi.org/10.5888/pcd15.170477>
- Jilcott Pitts, S.B., Graham, J., Mojica, A., Stewart, L., Walter, M., Schille, C., McGinty, J., Pearsall, M., Whitt, O., Mihas, P., Bradley, A. and Simon, C. (2016). Implementing healthier foodservice guidelines in hospital and federal worksite cafeterias: barriers, facilitators and keys to success. *Journal of Human Nutrition and Dietetics*, 29(6), 677-686. <https://doi.org/10.1111/jhn.12380>
- Jun, J., Kang, J. and Hyun, S.S. (2017). Effects of third-party certification on patrons' service quality evaluation in the luxury-restaurant industry. *British Food Journal*, 119(4), 771-789. <https://doi.org/10.1108/bfj-06-2016-0272>
- Kahn-Marshall, J.L. and Gallant, M.P. (2012). Making healthy behaviors the easy choice for employees: a review of the literature on environmental and policy changes in worksite health promotion. *Health Education and Behavior*, 39(6), 752-776. <https://doi.org/10.1177/1090198111434153>
- Kong, J.P. and Mohd Jamil, S. (2014). Level of satisfaction among postgraduate health sciences students on the cafeteria facilities in Universiti Kebangsaan Malaysia, Kuala Lumpur Campus. *International Journal of Quality and Service Sciences*, 6(4), 258-273. <https://doi.org/10.1108/ijqss-06-2013-0031>
- LaCaille, L.J., Schultz, J.F., Goei, R., LaCaille, R.A., Dauner, K.N., de Souza, R., Nowak, A.V. and Regal, R. (2016). Go!: results from a quasi-experimental obesity prevention trial with hospital employees. *BMC Public Health*, 16, 171. <https://doi.org/10.1186/s12889-016-2828-0>
- Lederer, A., Toner, C., Krepp, E.M. and Curtis, C.J. (2014). Understanding hospital cafeterias: results from cafeteria manager interviews. *Journal of Public Health Management Practice*, 20(1), 50-53. <https://doi.org/10.1097/PHH.0b013e31829f7378>
- Lesser, L.I., Hunnes, D.E., Reyes, P., Arab, L., Ryan, G.W., Brook, R.H. and Cohen, D.A. (2012). Assessment of food offerings and marketing strategies in the food-service venues at California Children's Hospitals. *Academic Pediatrics*, 12(1), 62-67. <https://doi.org/10.1016/j.acap.2011.09.004>
- Lindeman, A., Fougeron, M., Vaughn, S., Thaman, T. and Cummings, S. (2016). Applying Stealth Strategy in a Hospital Cafeteria: An Effective Technique to Maximize Exposure to Lower Sodium Foods. *Journal of the Academy of Nutrition and Dietetics*, 116(9 Supplement), A11. <https://doi.org/10.1016/j.jand.2016.06.020>
- Loh, Z. and Hassan, S.H. (2021). Consumers' attitudes, perceived risks and perceived benefits towards repurchase intention of food truck products. *British Food Journal*, 124(4), 1314-1332. <https://doi.org/10.1108/bfj-03-2021-0216>
- Mathur, T. and Gupta, A. (2019). Impact of 'Dining atmospherics' and 'Perceived food-quality' on customer re-patronage intention in fast-casual restaurants. *Tourism and Hospitality Management*, 25(1), 95-119. <https://doi.org/10.20867/thm.25.1.6>
- McCurley, J.L., Levy, D.E., Rimm, E.B., Gelsomin, E.D., Anderson, E.M., Sanford, J.M. and Thorndike, A. N. (2019). Association of Worksite Food

- Purchases and Employees' Overall Dietary Quality and Health. *American Journal of Preventive Medicine*, 57(1), 87-94. <https://doi.org/10.1016/j.amepre.2019.02.020>
- Ministry of Health Malaysia (2016a). Garis Panduan Kafeteria Sihat. 2nd ed. Retrieved from Ministry of Health Malaysia website: <http://myagric.upm.edu.my/id/eprint/20349/> [In Bahasa Malaysia].
- Ministry of Health Malaysia (2016b). National Plan of Action for Nutrition of Malaysia III 2016-2025. National Coordinating Committee on Food and Nutrition (NCCFN). Retrieved from Ministry of Health Malaysia website: https://www.moh.gov.my/moh/resources/Pemakanan/Buku_National_Plan_of_Action_for_Nutrition_of_Malaysia_III_2016-20251.pdf
- Moran, A., Krepp, E.M., Johnson Curtis, C. and Lederer, A. (2016). An Intervention to Increase Availability of Healthy Foods and Beverages in New York City Hospitals: The Healthy Hospital Food Initiative, 2010-2014. *Preventing Chronic Disease*, 13, 150541. <https://doi.org/10.5888/pcd13.150541>
- Nunnally, J. (1978). Psychometric theory. New York, USA: McGraw-Hill.
- Onufrak, S.J., Zaganjor, H., Pan, L., Lee-Kwan, S.H., Park, S. and Harris, D.M. (2019). Foods and Beverages Obtained at Worksites in the United States. *Journal of the Academy of Nutrition and Dietetics*, 119(6), 999-1008. <https://doi.org/https://doi.org/10.1016/j.jand.2018.11.011>
- Othman, M., Salehuddin, N., Karim, M.S.A. and Ghazali, H. (2012). Customers' Satisfaction towards Institutional Foodservices: An Insight into Universities in the Klang Valley, Malaysia. *SSRN*, 2012, 2174173. <https://doi.org/10.2139/ssrn.2174173>
- Patsch, A.J., Smith, J.H., Liebert, M.L., Behrens, T.K. and Charles, T. (2016). Improving Healthy Eating and the Bottom Line: Impact of a Price Incentive Program in 2 Hospital Cafeterias. *American Journal of Health Promotion*, 30(6), 425-432. <https://doi.org/10.1177/0890117116658237>
- Pérez-Villarreal, H.H., Martínez-Ruiz, M.P., Izquierdo-Yusta, A. and Gómez-Cantó, C.M. (2020). Food Values, Benefits and Their Influence on Attitudes and Purchase Intention: Evidence Obtained at Fast-Food Hamburger Restaurants. *Sustainability*, 12(18), 7749. <https://doi.org/10.3390/su12187749>
- Preacher, K.J. and Hayes, A.F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, and Computers*, 36, 717-731. <https://doi.org/10.3758/BF03206553>
- Preacher, K.J. and Hayes, A.F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40, 879-891. <https://doi.org/10.3758/BRM.40.3.879>
- Roscoe, J.T. (1975). Fundamental research statistics for the behavioral sciences. 2nd ed. New York, USA: Holt Rinehart and Winston.
- Sahud, H.B., Binns, H.J., Meadow, W.L. and Tanz, R.R. (2006). Marketing fast food: impact of fast food restaurants in children's hospitals. *Pediatrics*, 118 (6), 2290-2297.
- Singh, A., and Verma, P. (2017). Factors influencing Indian consumers' actual buying behaviour towards organic food products. *Journal of Cleaner Production*, 167, 473-483. <https://doi.org/10.1016/j.jclepro.2017.08.106>
- Steiger, J.H. (2007). Understanding the limitations of global fit assessment in structural equation modeling. *Personality and Individual Differences*, 42(5), 893-898.
- Sudman, S. (1976). Applied sampling. New York, USA: Academic Press.
- Sulek, J.M. and Hensley, R.L. (2004). The Relative Importance of Food, Atmosphere, and Fairness of Wait: The Case of a Full service Restaurant. *Cornell Hotel and Restaurant Administration Quarterly*, 45 (3), 235-247. <https://doi.org/10.1177/0010880404265345>
- Tabachnick, B.G. and Fidell, L.S. (2007). Using Multivariate Statistics. 5th ed. Boston, USA: Allyn and Bacon.
- Tamrakar, D., Shrestha, A., Rai, A., Karmacharya, B.M., Malik, V., Mattei, J. and Spiegelman, D. (2020). Drivers of healthy eating in a workplace in Nepal: a qualitative study. *BMJ Open*, 10(2), e031404. <https://doi.org/10.1136/bmjopen-2019-031404>
- Tandon, A., Dhir, A., Kaur, P., Kushwah, S. and Salo, J. (2020). Behavioral reasoning perspectives on organic food purchase. *Appetite*, 154, 104786. <https://doi.org/10.1016/j.appet.2020.104786>
- Tarro, L., Aceves-Martins, M., Tinena, Y., Parisi, J.L., Blasi, X., Giralt, M., Llauroadó, E. and Sola, R. (2017). Restaurant-based intervention to facilitate healthy eating choices and the identification of allergenic foods at a family-oriented resort and a campground. *BioMed Central Public Health*, 17(1), 393-402.
- Temesi, A., Bacso, A., Grunert, K.G. and Lakner, Z. (2019). Perceived Correspondence of Health Effects as a New Determinant Influencing Purchase

- Intention for Functional Food. *Nutrients*, 11(4). <https://doi.org/10.3390/nu11040740>
- Thomas, E.L., Puig Ribera, A., Senye-Mir, A. and Eves, F.F. (2016). Promoting Healthy Choices in Workplace Cafeterias: A Qualitative Study. *Journal of Nutrition Education Behavior*, 48(2), 138-145. <https://doi.org/10.1016/j.jneb.2015.11.001>
- Thorndike, A.N., Riis, J. and Levy, D.E. (2016). Social norms and financial incentives to promote employees' healthy food choices: A randomized controlled trial. *American Journal of Preventive Medicine*, 86(1), 12-18. <https://doi.org/10.1016/j.yjmed.2016.01.017>
- Thorndike, A.N., Riis, J., Sonnenberg, L.M. and Levy, D.E. (2014). Traffic-light labels and choice architecture: promoting healthy food choices. *American Journal of Preventive Medicine*, 46(2), 143-149. <https://doi.org/10.1016/j.amepre.2013.10.002>
- Tran, V.D. and Le, N.M.T. (2020). Impact of Service Quality and Perceived Value on Customer Satisfaction and Behavioral Intentions: Evidence from Convenience Stores in Vietnam. *The Journal of Asian Finance, Economics and Business*, 7(9), 517-526. <https://doi.org/10.13106/jafeb.2020.vol7.no9.517>
- van Kleef, E., Otten, K. and van Trijp, H.C.M. (2012). Healthy snacks at the checkout counter: A lab and field study on the impact of shelf arrangement and assortment structure on consumer choices. *BioMed Central Public Health*, 12, 1072. <https://doi.org/10.1186/1471-2458-12-1072>
- Wang, E.S.-T. and Tsai, M.-C. (2019). Effects of the perception of traceable fresh food safety and nutrition on perceived health benefits, affective commitment, and repurchase intention. *Food Quality and Preference*, 78, 723. <https://doi.org/10.1016/j.foodqual.2019.103723>
- Wu, H.W. and Sturm, R. (2014). Changes in the energy and sodium content of main entrees in US chain restaurants from 2010 to 2011. *Journal of the American Dietetic Association*, 114(2), 209-219. <https://doi.org/10.1016/j.jand.2013.07.035>
- Yoon, H.J. and George, T. (2012). Nutritional information disclosure on the menu: Focusing on the roles of menu context, nutritional knowledge and motivation. *International Journal of Hospitality Management*, 31(4), 1187-1194. <https://doi.org/10.1016/j.ijhm.2012.02.006>