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Consumers' perceived value of healthier eating: A SEM analysis of the internalisation of dietary norms considering perceived usefulness, subjective norms, and intrinsic motivations in Singapore

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Abstract

Consumers' internalisation of social norms is at work when they make routine, healthier food choices in everyday contexts. We investigate the dynamics of this phenomenon in Singapore, where over 98% of consumer food products are imported. To study this, we propose, through a consumer perspective (n = 316) via Partial Least Squares Structural Equation Modelling (PLS-SEM), a model that establishes a positive relationship between perceived usefulness, subjective norms, and intrinsic motivations and the perceived value of healthier food. Subjective norms are themselves found to be a function of perceived barriers, facilitating conditions and personal innovativeness. Our framework contributes to establish a shift in the drivers of healthier food choices toward a more socio-culturally grounded decision-making approach that is particularly relevant to understand food consumption. We show that daily food routines (opposing the exceptional healthy food item) are encapsulated in perceived value of healthier eating. The data indicates further that to support healthier food product consumption, both policy makers and food providers must facilitate imported foods that meet quickly changing lifestyle requirements.

1 | INTRODUCTION

The growth of civilisational ailments such as obesity or diabetes (WHO, 2020a, 2020b) and the increasing health-related costs (Blakely et al., 2020) are valid reasons to justify widespread dietary changes. Importantly, the absence of hegemony from any dietary schools of thought (e.g., weight watchers, body reset), gurus (e.g., Atkins, Abrahams-slim fast) or wonder food also calls for the understanding of how relevant everyday actions and suitable dialogue among stakeholders of a healthier food ecosystem could occur. While putting blame on people has been usual for many years, evolutions in mindsets are now pointing toward the responsibilities of the food industry and government policies (and related actions implying for example to counter junk food advertising, to promote health information on packaging, to back sugar tax and better agricultural policy) (Festila & Chrysochou, 2018; Kahan & Mehrzad, 2020). It is noted here that a more appropriate food consumption should be seen as a quest questioning consumer's behavioural dimensions and particularly the importance of social norms related to the food system (Adriaanse, Vinkers, De Ridder, Hox, & De Wit, 2011; Eker, Reese, & Obersteiner, 2019; Roman, 2020). The individual healthier appeal of food cannot simply be portrayed as a dichotomy between healthy and unhealthy products considering the former as "those that contains less calories, more cognitive values, and lowest taste pleasure, while unhealthy products are the ones that have more affective values and higher taste" (Cao, Wang, & Wang, 2020, p. 264). It is not anymore about questioning the value of a specific healthy food product. More attention should rather be paid to the understanding of social drivers that make consumers inclined, on a daily basis, to appreciate the perceived value of healthier food choice as representing a basket of products constitutive of a regular food intake.

This paper aims to analyse the often taken-for-granted normative drivers of healthier food's perceived value for consumers and their implications for grocery retail food management through a study conducted in Singapore. We contribute to the literature on consumer behaviour related to healthier eating by unpacking social norms' internalisation through perceived usefulness, subjective norms and intrinsic motivation, which underlie the drive toward healthier food choices as innovative behaviours. The study's core premise lies in understanding and acknowledging that most food choices are based on routinised, everyday actions within mundane, ordinary household food provisioning. This acknowledgement contrasts with the understanding of the drivers of exceptional healthy food consumption or diet plans.

The intention to eat *healthy* has a long investigative history with a myriad of underpinnings, such as biological needs (Gibson, 2006; Osman & Nelson, 2019), individualisation of health (Hakola & Tolvhed, 2018; Pelters & Wijma, 2016), household situations (Darmon & Warde, 2019), resources (French, Tangney, Crane, Wang, & Appelhans, 2019; Sproesser, Klusmann, Schupp, & Renner, 2015), access to stores (Cummins & Macintyre, 2006), skills (Wolfson, Leung, & Richardson, 2020), choice and retail restructuring (Elms, Kervenoael, & Hallsworth, 2016), manufacturing process, traceability, labelling and regulation (Hawkes et al., 2015; Thanem, 2009; Turnwald & Crum, 2019), and marketing promotion and communication (Festila & Chrysochou, 2018; Wang, Liaukonyte, & Kaiser, 2018). Indeed, healthy eating research stresses many factors, with most leveraging cases of specific Western consumers (e.g., seniors, teenagers, individuals with allergies or particular medical conditions, etc.), but it often excludes from the analysis average consumers' daily consumption and often neglects Asia, where most of the world's population resides (Duruz & Khoo, 2014; Minter, 2019; Palma, 2020; Tortajada & Zhang, 2016).

An increasing number of households have become more conscious of following a *healthier* diet and have acknowledged changing their priorities that reverberate in food viability, accessibility, culture, control, and stress to preparation skills (Health Promotion Board, 2019). Beyond the superficial glamour of healthy dietary items (e.g., quinoa, almonds or broccoli), food security and production issues, access (for an ageing population) and technologies (recommendations and fitness apps), the search for suitable shopping channels and health policies have all made the perceived value of everyday food products a central determinant that contributes to shaping overall collective, healthier consumption choices. As such, perceived value of food influences consumers' experiences and it pushes food retailers toward making innovative offers and governments to establish revised policies (Burt, Coe, & Davies, 2019; Fernie & Sparks, 2018; Hardaker, 2018; Nair, 2018).

Yet, whether research refers to the intention to eat *healthy* food or to rely on *healthier* food consumption, it remains tied to a vision through which too often, food choices are made and often cultivated by tastemakers and industry co-conspirators supported by illusory body-shape expectations (Blythman, 2014; Peschel, Orquin, & Mueller Loose, 2019). We contend that the understanding of healthy food preferences should be enriched by grasping the learning and socialisation processes that drive consumers' integration of discourses and preferences in the longer term. Some research has shown consumers recognise the personal benefits of healthier eating (Øygard & Rise, 1996), but how to assess value to be viable and meaningful in the long term is still widely unknown. In considering the social drivers of healthier eating's perceived value, our research aims to reveal how individuals can draw conclusions about healthier food beyond their questioning of the value of particular healthy products, which is often related to fashionable crazes (Blythman, 2014; Luomala, Paasovaara, & Lehtola, 2006; Renner, Sproesser, Strohbach, & Schupp, 2012).

Consumers are thus value driven (Levy, 1999), and, at the broadest level, perceived value (PV) is defined as a "consumer's overall assessment of the utility of a product (or service) based on perceptions of what is received and what is given" (Zeithaml, 1988, p. 14). At its narrowest point, PV often represents the trade-off between quality and price (Cravens, Holland, Lamb, & Moncrief, 1988). In regard to food value, studies establishing and refining the Perval scale (Sweeney & Soutar, 2001), Richins (1994) possession rating scale and the eating motivation survey (TEMS) have provided valuable insights. Yet, many have considered PV as a single-item scale and, more rarely, as a multidimensional construct embedded with specific local spaces (El-Adly & Eid, 2016). Thus, to inform current consumer choice and future food policy strategies, understanding healthier food PV is a core dimension of the rationale for choosing multiple dietary products under daily conditions (moving away from the exceptional).

To do so, this study examines the socio-cognitive constructs of perceived usefulness (PU), subjective norms (SN), intrinsic motivation (IM) along perceived barriers (PB), facilitating conditions (FC) and personal innovativeness (PI) that drive consumers' PV of healthier eating in Singapore, a country where over 93% of food products are imported and, potentially, a larger range of regulatory levers can be implemented. Drawing on the integrated model of behavioural prediction (Yzer, 2012), we empirically test a model that leverages Partial Least Squares Structural Equation Modelling (PLS-SEM) and data from 316 respondents in Singapore.

We aim to contribute to the literature on healthier eating and policy food management in two ways. First, we show the multifaceted aspects of healthier eating's PV and unpack the internalisation of social norms that prevail in everyday food consumption choices. This enables to provide insight into the current antecedents of healthier food choices, which are based on the internalisation of social norms, by completing the existing literature that has diversely revealed the stakes of healthier eating in terms of information management (Barreiro-Hurlé, Gracia, & De-Magistris, 2010; Blaylock, Smallwood, Kassel, Variyam, & Aldrich, 1999). Second, by shedding light on the importance of seeing the PV of healthier eating as a multi- (vs mono-) faceted construct, we aim to contribute to the debate on food policy in Singapore (and other countries that are net importers of food products[1]). Singapore has one of the most well-fed populations in the world. It boasts multicultural cuisines and increasing purchasing power that allows individuals to purchase quality food. In this way, it represents a suitable case study of the dilemma regarding food security and

the obesity crisis faced by many countries including in Asia (Li, Phau, Lu, & Teah, 2018; The Economist Intelligence Group, 2020).

The paper is structured as follows: in the second section, we explain how understanding the drivers of healthier eating can leverage the concept of PV, we identify healthier food PV through consumption-related behaviours and norms, and we develop the hypotheses. The research methodology is presented in Sections 3 and 4 reveals the empirical investigation's results. Section 5 discusses the findings, and Section 6 sets out the implications and subsequent theoretical and managerial implications.

2 | THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

2.1 | Understanding the drivers of consumers' healthier eating PV

The increase in food consumption has been one of the most impressive social changes in today's world (Herz, 2017; Sacks, 2014). Although many consumers still lack access to basic food products, for many, excess choice is now a daily reality (Henderson, 2017). In this context, discussions on healthy food have led to debates on what, when and how to eat and to follow fashionable regimens (e.g., name-brand diets such as Atkins, Biggest Loser, Dietary Approaches to Stop Hypertension [DASH], Weight Watchers, etc.) (Murphy, 2020; Nair, 2018). Healthy food studies have analysed topics such as food insecurity (Valdes, 2019); food waste (Bhatt et al., 2018; Joshi & Visvanathan, 2019); food safety (Tarulevicz, 2016), climate action (Amjath-Babu, Aggarwal, & Vermeulen, 2019) and gender impacts (Rao, 2020). At the same time, another area of studies relates to healthier food. It has underlined the importance of consumers establishing trade-offs (e.g., between nutrition, taste, convenience and cost) (Blaylock et al., 1999; Swan et al., 2018) related to the engagement in healthier eating habits with the calculation of personal payoffs that reflect IM (Øygard & Rise, 1996). These involve the normalisation of certain behaviours (Robinson, Fleming, & Higgs, 2014), with literature noting that normalisation must occur in everyday contexts in which individuals' actions are socially constructed through access to disparate information (Barreiro-Hurlé et al., 2010; Blaylock et al., 1999; Ippolito, 1999).

The information consumers can access on the value of food products is related to utilitarian standpoints on specific nutrients. This involves a trade-off in terms of PU between benefits/quality and cost/price. From this perspective, value is defined as a consumer's "utility of a product based on perceptions of what is received and what is given" (Zeithaml, 1988, p. 14). Based on economic utility, in an era of relative abundance for many, the value of food products has led to an accepted and legitimate policy target broadly defined as not being hungry; thus, it is not advancing the conversation around desirable food consumption. Following the Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), many studies have demonstrated a causal link between attitudes and behaviour toward healthy food intake by measuring the relationship between beliefs, attitudes, intentions and behaviour. However, the prevalence of obesity in many countries reveals a crisis that is indicative of a lack of association between intention and healthy eating behaviour. The PV of healthier eating has thus to include factors beyond individual control (e.g., certain nutrition ingredients are banned by some governments, but not others), and in this situation, it indicates that "intentions are sometimes found to be poor predictors of behaviour even over relatively short time periods (Ajzen, 2011, p. 1115). This reveals the importance of sociological drivers (i.e., learning and socialisation effects) in healthier eating behaviours.

The variables in models like the Theory of Planned Behaviour (TPB) are "assessed with respect to performing a behaviour of interest, anticipated affective reactions that are usually measured in relation to not [italics in text] performing the behaviour" (Ajzen, 2011, p. 1117). In the case of food choice, individuals usually find it difficult to clearly remember past consumption where not performing a behaviour, like eating vegetables, is often present (i.e., inaction or not performing the behaviour is often underreported) (see also in sport Abraham & Sheeran, 2003). As previously discussed, complex problems need to encourage new mindsets that go beyond intention to eat healthy as a specific single behaviour toward a cumulative approach reflected in individual overall PV of entire food consumption over a longer horizon, (i.e., beyond fashions and hypes). Admittedly, promoting healthy eating via advertisements and campaigns may be counterproductive because when the promotion finishes, individuals may revert to routine unhealthy behaviours. Public advertisement and health communication are powerful tools along legal mechanisms to regulate settings, but these can still benefit from a more thorough understanding of the drivers of PV of healthier eating.

2.2 | Healthier eating as an innovative behaviour that questions consumers' values and social norms' internalisation

Research works examining the intention to eat healthy food very often ignore the drivers of being socially engaged in wider consumption that incorporates a lifetime of preferences and experiences. As such, many food studies disregard the social drivers of food choice that are more than just related to a specific performance (Scholl-Grissemann, 2018). For consumers, especially those in countries where most food is imported, it is important to better capture the long-term indicators through which individuals' assemble food value by creating the right context toward more sustainable consumption (Nørgaard & Brunsø, 2011). Indeed, all too often, consumers follow predictable faulty routines because the nutritional value on the label promises the achievement of short-term goals (e.g., diets). It is also noted that consumers do not acknowledge but still accept uncertainties considering preferences that are often incoherent, incomplete, inconsistent or mistaken (Festila & Chrysochou, 2018; Foucault, 1988).

PV is thus endemic, but circumstances do change. How we collectively learn what food value is may be just as important as understanding the failings of the food system (e.g., addiction, obesity, bulimia, anorexia, etc.). PV is a multifaceted concept that metamorphoses, fine-tunes itself, converts and adjusts over time. This implies consumers not only follow outside triggers but also have to legitimise their own PV of food within wider systems by confronting and evaluating the powers of the various factors including, in particular, the members of their own social group or household (Reid, Worsley, & Mavondo, 2015; Worsley et al., 2018).

Recent technological trends (e.g., food recommender apps, smart watches, social media, etc.) encourage longer-term transition and change and, in effect, they engage consumers with new practices that reflect feasible, daily, evolving and durable food values. These new arrangements imply that consumers are more responsible and encourage not to stick to socially desirable behaviours related to food (Munichor & Friedlander, 2019). These evolutions are illustrated in the major shifts occurring in food retail since the invention of the supermarket in the 1960s. These changes, beyond the reach of this study, include, for example, format and channel evolution, technology, planning, product development, packaging, pricing, payment, logistics, branding or greening innovation (Adhikari, Biswas, & Avittathur, 2019; Etilé & Oberlander, 2019; Hristov & Reynolds, 2015). All these changes, which reflect how society values food, are considered as critical drivers of the food transition that is taking place worldwide (Baker & Friel, 2016; Kelly, 2016; Rupa, Umberger, & Zeng, 2019; Toiba, Umberger, & Minot, 2015; Umberger, He, Minot, & Toiba, 2015).

Consequently, the drive toward healthier eating can be explained by its PV and has to be apprehended as an innovative behaviour. This calls for an understanding of the influence of norms and the extent to which they are internalised (i.e., how much norms are coherent with internal values and interpretations of right and wrong, good or bad) (Jansson, Marell, & Nordlund, 2011; Jansson, Nordlund, & Westin, 2017). The PV of healthier eating thus begs to question how everyday choices relate to value (in the singular) and how consumers stand for or against norms and values (in the plural). As such, value characterises the worth, usefulness or importance of something as the result of a position taken on an object or subject; it thus reflects an appraisal of factors and then, a decision because values are "the determinants of any social behaviour including attitude, ideology, beliefs and justifications" (Boksberger & Melsen, 2011, p. 230; see also Rokeach, 1973). In what follows, we establish some hypotheses on the drivers of heathier food's PV by including PU, IM and SN considering that healthier food choices question everyday processes through which consumers cultivate a healthy mind in a healthy body (Øygard & Rise, 1996; Thompson & Hirschman, 1995).

2.3 | Hypotheses generation: Consumers' SN', PU's and intrinsic motivations drivers' effects on the PV of healthier eating

To investigate the extent to which consumers (via education, access, finance, social services, etc.) are in the actual position to respond to change, we must take stock of consumers' health consciousness in light of current and future sociocultural disruptions that will allow proactive informing and decision making on how to carefully act. Understood in this way, healthier food consumption is the outcome of repeated and nudged judgements by consumers over their lifetimes. The merit of understanding the drivers of healthier eating's PV is that it allows questioning the social drivers that lead individuals to place value (in the singular) on certain food choices. Thus, we choose PV of healthier eating as our dependent variable allowing to reveal the worth of healthier food and how its consumption is bound to the internalisation of social norms through individuals' disciplinary and problematising actions (Thompson & Hirschman, 1995). We posit that this internalisation operates via three main paths: SN and their antecedents (H1–H3 and H5), PU (H4) and IM (H6).

2.3.1 | Perceived barriers

Related to healthy eating, PB have been put forwards to show the existence of extrinsic obstacles to individuals' adoption of socially supported behaviour and related SN (Pinho et al., 2018). Specifically, these barriers reflect beliefs such as overconfidence in one's own practices, a higher risk perception for food prepared by others or susceptibility to foodborne ailments beyond individual control (Aitken, Watkins, Williams, & Kean, 2020). Further aspects such as food handling issues, disagreement with recommendations and information provided or lack of rigour despite recommended advice are also integrated into these (Young & Waddell, 2016). PB also reflect access, financial and time constraints, which together create a gap between attitude and behaviour (Garcia & Mann, 2003; Jun, Arendt, & Kang, 2016; McEachern, Seaman, Padel, & Foster, 2005). In the present study, PB are thus viewed as inescapable hurdles that are expected to affect SN because they indirectly and negatively influence the adoption of healthier behaviours. This leads to hypothesis 1 (H1):

H1 The manifest presence of PB is negatively related to SN supporting healthier food products' consumption.

2.3.2 | Facilitating conditions

FC represent the external constraints shaping SN toward healthier food value and consumption (Jasinska et al., 2012). In this study, FC indicate the variety of perceptions individuals hold that support intended behaviours, but that also reflect an unequal allocation of resources (Glynn & Ruderman, 1986; Trapp et al., 2015). Within the increasing concerns over changes in food consumption, health consciousness as a trend has revealed significant gaps related to skills, time availability and financial resources when consumers decide to eat more healthily (Azzurra, Massimiliano, & Angela, 2019; Gisslevik, Wernersson, & Larsson, 2017; Herz, 2017; Sacks, 2014). Skills, time and financial means are conceptualised as a fluid set that requires work and maintenance and is often portrayed as a necessary evil for continuing a long-lasting positive appreciation of the value of healthier food through effort. Thus hypothesis 2 (H2) is stated as:

H2 There is a positive relationship between FC and SN supporting healthier food products' consumption.

2.3.3 | Personal innovativeness

Consumers vary in their willingness to adopt new technologies. PI is thus defined as "the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system" (Rogers, 2002, p. 990). Healthier eating as PI favouring the development of food innovation can be observed through consumers' willingness to test, try and reflect on the advantages of changing food consumption behaviours (Roehrich, 2004). As such, this form of PI represents the diverse characteristics and sides of individual identity (Belk, 2014; Herz, 2017). In agreement with Ajzen's (1991) TPB whereby innovative individuals display more positive attitudes toward change, we expect a significant relationship between PI and effective value individuals perceive for themselves. This relationship allows us to reflect on how consumers relate to far-reaching movements in the food market, such as slow food, organic farmer markets or local food. This leads to hypothesis 3 (H3):

H3 PI is significantly related to SN supporting healthier food products' consumption.

2.3.4 | Perceived usefulness

PU is defined as "the degree to which a person believes that using a particular system would enhance his/her job performance" (Davis, 1989, p. 320). Identified early in cognitive evaluation theory (Deci, 1971), PU reflects an outcome of usage and it illustrates the primary incentive to adopt a new behaviour. PU in health-related decision making represents the potential benefits of taking action for a better life. It has been strongly correlated with the idea of quality toward long-term wellness consciousness (Tarkiainen & Sundqvist, 2005; Vindigni, Janssen, & Jager, 2002). PU involves a consumer performing due diligence regarding whether the kind of value set embedded in a particular usage or behaviour matches with her/his individual lifestyle. PU of healthier food requires individuals to reconcile the disconnection between often-fancy industrial and convenient food offerings and more conventional, but sometimes unexciting, choices that are considered beneficial (Baker & Friel, 2016). This leads to hypothesis 4 (H4):

H4 PU of healthier food is positively related to the PV of these products.

2.3.5 | Subjective norms

SN represent social factors which lead to social pressures that support certain behaviours while proscribing others (Ajzen, 1991). In effect, the influences of communities or groups can lead consumers to approve or reject a new food regime and/or negotiate change. External nudging can appeal to individuals' internal norms highlighting their self-negotiated standards. It can also lead consumers to follow injunctive norms when their decision-making mechanisms are in contention with each other or when the desire to do something is lurking in the background (Mahon, Cowan, & McCarthy, 2006; Vinnell, Milfont, & McClure, 2019). This leads to hypothesis 5 (H5).

H5 SN supporting healthier food products are positively related to the PV of these products.

2.3.6 | Intrinsic motivation

IM is often defined as "an individual's feeling of challenge or competence derived from performing a job" (Keaveney, 1992, p. 151). From a consumer perspective, knowledge of the intrinsic value driving food consumption is indispensable to generate sustainable consumption systems. This reveals social norm internalisation as evidenced by studies that rely on the norm activation model (Schwartz, 1977) or on the value belief-norm theory (Stern, 2000). These studies found that personal consciousness along sense of responsibility inform specific behaviours. IM leads to significant deviation from ordinary practices and habits that can directly affect PV. In the case of healthier eating, it might encompass values related to sustainability, such as reduced meat consumption, environmentally friendly food products and better food waste management (Stancu, Haugaard, & Lähteenmäki, 2016). IM triggers behaviours such as meeting the latest food standards, implementing food priorities, mastering new peer-to-peer technological platforms. This leads to hypothesis 6 (H6):

H6 IM for healthier food products is positively related to the PV of these products.

2.3.7 | Control variables

The previous literature has documented the importance of food culture, culinary appreciation or food specific control variables in healthy eating studies (Herz, 2017; Sacks, 2014). In particular, as both genders may not be unequally sensitive to body images and shapes, gender is likely to influence various levels of sensitivity to the value of functional aspects of healthier eating that relate to PU (Lombardo et al., 2019). In the specific case of Singapore, within a wider shift toward unhealthier food consumption habits, it is noted indeed that the prevalence of obesity in male population has doubled between 1997 and 2016 (Knoema, 2016). Hence, we included gender as a control variable of PV of healthier eating.

Additionally, we included the dimension of attitude toward change and lifestyle vulnerability. Following Ajzen's (1991) TPB we consider that innovative individuals will be affected by their attitudes toward change and thus we expect this control variable to potentially impact PV of healthier eating. Lifestyle vulnerability is regarded by many as representing a psychological state that influences change in

behaviour to desired outcomes and the capability of making the change (Bandura, 1977). Here we thus follow prior studies and controlled for sensibility to deviation in often mentioned special times including anxiety, eating with friends and special occasions thus controlling for confidence in coping abilities under pressure (Adriaanse et al., 2011).

3 | RESEARCH METHOD

Our research focused on respondents in Singapore, which is often presented as a popular Asian food paradise, where a plethora of food choices from many different cuisines that reflect its multicultural population, are available. Certainly, a Health Promotion Board (2014) survey revealed that more than 60% of Singaporeans were dining out at least four times per week and typically working up to 16 hrs each day, leading to suffer from traditional urban-lifestyle maladies. Moreover, in conjunction, the World Bank (2020) reported the agriculture sector was contributing less than 1% to the country's GDP in 2017; thus, Singapore, with a population of 5.7 million and a large wealthy middle and upper-middle class, was importing over 98.4% of its agricultural products.

3.1 | Participants and procedures

In total, 316 respondents (156 males and 160 females) from Singapore responded to our survey. Of those respondents, 164 belong to generation X (born from mid 60s to mid 80s), 103 belong to generation Y (born from mid 80s to end of 90s), and 49 are baby boomers (born from 1946 to mid 60s) (see Table 1). Respondents within downtown Singapore in Holland and Orchard roads were approached around shopping galleries entrances and food courts areas. A group of students wearing our institution logo t-shirt asked to fill in a survey on smartphone. Respondents were directed toward Google Forms by scanning a QR code. A brief explanation of the research and our institution ethical guideline was provided. It was underlined that it was an academic study. Convenience non-probability sampling was used for this study, and data was collected during face-to-face meetings at different times during a normal week period (i.e., no holidays or special events) in April 2019. Collecting data in this way allowed us to capture a diversity of respondent profiles within the time frame. Non-probability sampling is appropriate because healthier eating is an innovative behaviour that is appealing to a particularly broad and rather undefined part of the population. Indeed, there is no reliable sample frame for the targeted population (Zikmund, D'Alessandro, Winzar, Lowe, & Babin, 2014).

TABLE 1 Descriptive statistics

Variable definition	Frequency	Percent (%)
Gender		
Male	156	49.40
Female	160	50.60
Age range		
Generation Y (born from mid 80s to end of 90s)	103	32.60
Generation X (born from mid 60s to early 80s)	164	51.90
Baby boomers (born from 1946 to mid 60s)	49	15.50
Employment status		
Full-time managerial positions	129	40.80
Full-time nonmanagerial positions	139	44.00
Part-time	35	11.10
Unemployed	13	4.10

3.2 | Measures

The survey contained statements related to perceived barriers (PB), facilitating conditions (FC), personal innovativeness (PI), intrinsic motivation (IM), perceived usefulness (PU), perceived value (PV), subjective norms (SN), attitude (AT) and lifestyle vulnerability (LV). The 29 items were adapted from well-established sources to ensure the reliability and validity of our measurements (see Table 2). Survey respondents considered the statements on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

3.3 | Statistical analysis

We used Partial Least Squares-based (PLS-based) Structural Equation Modelling (SEM) to analyse the measurement model and structural model (Chin, 1998; Falk & Miller, 1992). PLS-SEM performs well for small sample sizes, and it is suitable for testing phenomenon in early stages of development (Fornell & Bookstein, 1982). Furthermore, PLS-SEM is justified as it does not require a multivariate-normal distribution (Albert & Merunka, 2013). Likewise, contrary to covariance-based structural equation modelling (CB-SEM) which is recommended to test well-established theories where previous empirical model have been validated, PLS-SEM offers greater flexibility. PLS-SEM is noted to be reliable for exploratory and early stage development types of analysis, which are more frequently used for theory building and address additional hypothesised complexity (Chin & Todd, 1995; Fornell & Bookstein, 1982; Ringle, Sarstedt, & Straub, 2012). As the proposed model has not previously been empirically validated, and our research conducts exploratory analyses to formulate new theoretical developments, it is appropriate to use PLS-SEM for the analysis.

4 | RESULTS

4.1 | Measurement model

We tested the reliability and validity of each construct using PLS by running a bootstrapping sample of 5,000. The reliability and validity of

TABLE 2 Constructs and statements

Constructs and statements	Sources
PB	
1. In my opinion, healthy food is expensive.	Garcia and Mann (2003), Jun et al. (2016)
2. In my opinion, there are not many alternatives for healthy food.	
3. In my opinion, it takes more time to prepare healthy food.	
4. In my opinion, healthy food does not taste as good as less healthy food.	
FC	Azzurra et al. (2019)
1. I have good cooking skills to prepare my own meals.	
2. I usually have time to prepare my own meal.	
3. I usually have financial means to afford healthy food.	
PI	Dutta and Youn (1999)
1. I am usually among the first to try out new healthy food.	
2. I like to buy and explore different healthy foods options.	
3. In general, I look up for new healthy food recipes and try cooking them.	
SN	
1. My family supports healthy lifestyle.	Ajzen (1991); Hansen, Sørensen, and Eriksen (2018), Hansen and Thomsen (2018), Yzer (2012)
2. My friends encourage healthy eating.	
3. The TV programs/ advertisements encourage me to eat healthy.	
4. The information I see online (social media) encourage me to eat healthy.	
PU	
1. Eating healthy is useful for the future.	Davis (1989)
2. The use of healthy food make it easier not to be sick.	
3. Healthy food permits me to have more energy.	
PV	
1. Compared to normal food, eating healthy food is worthwhile.	Kim, Chan, and Gupta (2007)
2. Overall, eating healthy food deliver me good value.	
3. Compared to the time I need to spend, eating healthy is worthwhile to me.	
LV	
1. I tend to deviate from healthy food in special occasions.	Glynn and Ruderman (1986), Adriaanse et al. (2011)
2. I tend to overeat when I am feeling anxious, worried, depressed, annoyed, upset.	
3. I tend to ignore healthy options when I am eating out with friends.	
IM	
1. I want to prevent weight gain.	Dutta and Youn (1999), Phan and Chambers IV. (2018)
2. I want to set a good example for my family.	
3. I want to feel good about myself (physically and mentally).	
AT	Achtziger, Gollwitzer, and Sheeran (2008)
1. I feel that healthy eating is interesting	
2. I feel that healthy eating is enjoyable	
3. I feel that healthy eating is beneficial	

Abbreviations: AT, attitude; FC, facilitating conditions; IM, intrinsic motivation; LV, lifestyle vulnerability; PB, perceived barriers; PI, personal innovativeness; PU, perceived usefulness; PV, perceived value; SN, subjective norms.

the measurement model was ensured by assessing the convergent validity, reliability and discriminant validity of each construct. Initially, convergent validity was assessed for each construct by using the Confirmatory Factor Analysis (CFA) technique. From the results shown in Table 3, it appears all items were loaded properly within their theoretical constructs, and items were statistically significant at the 0.05 level. Next, all constructs' composite reliability was assessed using PLS (Lowry & Gaskin, 2014); each construct's reliability was greater than 0.70 (Chin, 1998). The measurement model's discriminant validity was tested; it is presented in Table 4, in which the square roots of Average Variance Extracted (AVE) are presented by the diagonal number and the interconstruct correlations are presented by off-diagonal numbers. Because the square roots of AVE are greater than the interconstruct correlations, they provide evidence of the measurement

TABLE 3 Results of the measurement model

Constructs	Items	Factor loading (> 0.7)	*M*	*SD*	Composite reliability	AVE
Perceived barriers	PB1	0.826	2.451	0.742	0.872	0.630
	PB2	0.773				
	PB3	0.795				
	PB4	0.779				
Facilitating conditions	FC1	0.662	3.566	0.616	0.788	0.556
	FC2	0.828				
	FC3	0.738				
Personal innovativeness	PI1	0.868	3.483	0.731	0.872	0.695
	PI2	0.844				
	PI3	0.788				
Attitude	AT1	0.786	3.505	0.607	0.806	0.675
	AT2	0.856				
Intrinsic motivation	IM1	0.760	3.849	0.525	0.77	0.529
	IM2	0.744				
	IM3	0.675				
Subjective norms	SN1	0.715	3.832	0.616	0.834	0.558
	SN2	0.770				
	SN3	0.708				
	SN4	0.791				
Perceived usefulness	PU1	0.714	3.782	0.495	0.772	0.530
	PU2	0.752				
	PU3	0.717				
Perceived value	PV1	0.795	3.801	0.510	0.796	0.567
	PV2	0.793				
	PV3	0.663				
Lifestyle vulnerability	LV1	0.875	3.786	0.525	0.757	0.534
	LV2	0.864				

TABLE 4 Discriminant validity of the measurement model

	AT	FC	IM	PB	PU	PV	PI	SN	LV
AT	**0.822**								
FC	0.261	**0.746**							
IM	0.258	–0.016	**0.727**						
PB	–0.374	–0.538	–0.025	**0.794**					
PU	0.238	0.107	0.376	–0.082	**0.728**				
PV)	0.357	0.300	0.426	–0.329	0.522	**0.753**			
PI	0.380	0.588	0.063	–0.586	0.065	0.281	**0.834**		
SN	0.389	0.415	0.218	–0.444	0.220	0.440	0.487	**0.749**	
LV	0.189	0.175	0.126	–0.093	0.287	0.189	0.101	0.087	**0.731**

Note: Bold values are a result less than 0.85 suggests that discriminant validity likely exists between the two scales.
Abbreviations: AT, attitude; FC; facilitating conditions; IM, intrinsic motivation; LV, lifestyle vulnerability; PB, perceived barriers; PI, personal innovativeness; PU, perceived usefulness; PV, perceived value; SN, subjective norms.

model's appropriate discriminant validity (Lowry & Gaskin, 2014). At that stage, we had to drop one item of the Lifestyle Vulnerability (LV3) and one item from the Attitude construct (AT3) to achieve the reliability and validity of the measurement model (please see Tables 2 and 3).

4.2 | Structural model and analysis

Figure 1 displays the test results, showing the strength of relationship between dependent and independent constructs as measured by path

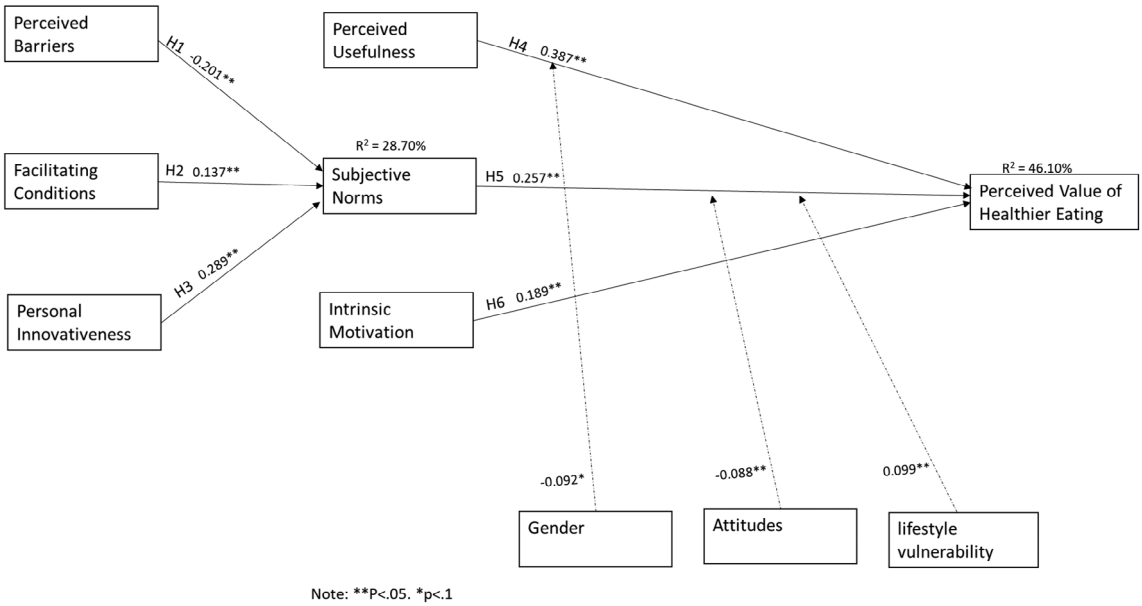

FIGURE 1 Results of the proposed model

coefficients, and the R-squared values that explains how much the variance is explained by independent constructs.

From the figure, PB have a significant negative influence on SN (ß = –.201, $p < .05$), which supports H1. FC were found to have a significant positive influence on SN (ß = .137, $p < .05$), which supports H2. Likewise, the impact of PI on SN was found to be significant and positive (ß = .289, $p < .05$), which supports H3. SN were then found to have a significant positive influence on PV (ß = .257, $p < .05$), which supports H5. In addition, the influence of SN was found to be controlled by attitudes, which suggests the influence is higher for consumers with negative attitudes (ß = –.088, $p < .05$) and was also controlled by life vulnerability in a way that the influence is higher for consumers with vulnerable lifestyles (ß = .099, $p < .05$); this demonstrates heterogeneity among consumers.

In addition to SN, PU was also found to have a significant positive influence on PV (ß = .387, $p < .05$), which supports H4. The influence of PU was found to be controlled by gender: PU influence is greater for male consumers (ß = –.092, $p < .1$) than female consumers. Moreover, IM was found to have a significant positive influence on PV as well (ß = .189, $p < .05$), which supports H6. As seen in Figure 1, the *R*-square value of SN is 28.70% which means a 28.70% variance of SN is explained by PB, FC, and PI. The model has an overall *R*-square value of 46.10%, meaning 46.10% variance of PV is explained by SN, PU and IM.

5 | DISCUSSION

Existing research has emphasised the importance and complexity of influences that contribute to the development of consumers' healthy food choices (Cao et al., 2020; Crawford, 1980; Kelly, 2016; Mete, Shield, Murray, Bacon, & Kellett, 2019; Osman & Nelson, 2019). These investigations exposed situations that lead to consumers' choices (Darmon & Warde, 2019; French et al., 2019) and how these are influenced by various stakeholders, including policy makers, manufacturers, marketers and retailers (Elms et al., 2016; Turnwald & Crum, 2019; Wang et al., 2018). Beyond the research explaining the intentions toward healthy food consumption, we respond to calls for more prescriptive investigations showing the drivers of day-to-day eating behaviour (Blythman, 2014; Herz, 2017; Peschel et al., 2019; Renner et al., 2012) by proposing a more detailed understanding of the PV of healthier eating as an innovative behaviour. This research is particularly relevant in countries that import a sizeable amount of their food, including Singapore in which despite abundant information it remains difficult to make sound decisions about food consumption (Glover & Poole, 2019; Health Promotion Board, 2019; Joshi & Visvanathan, 2019).

This study complements existing research that associates the drive for individuals with healthier eating intentions and the engagement in sustainable behaviours (Barreiro-Hurlé et al., 2010; Øygard & Rise, 1996; Robinson et al., 2014) by delving into the untapped ways through which PV of healthier eating is socially constructed. This PV depends on the multiple pathways through which consumers learn how to cope on a daily basis with ideologies, norms and their own routines and values, including some potential deviations because of various levels of both enjoyability and behavioural control.

We have proposed a model that establishes a positive relationship between SN, PU, intrinsic motivations and the PV of healthier eating. We have shown that SN themselves are a function of PB, FC and PI. Our model makes the concept of PV an overarching construct that is explained by underlying social factors that drive consumers' adoption of healthier eating behaviour. The study underlines the importance of various degrees of social norm internalisation through which consumers' everyday consumption choices are explained.

The core message of the paper is twofold. First, the deepest forms of internalisation (healthier eating social norms) are evidenced by internal motivation and, to a lesser extent, SN, which are important aspects that explain the value individual consumers put on healthier eating routines in the long term. The PV of healthier eating also depends on its PU as through the latter the fullest potential of food in the long term is reflected. Conceptually, the PV of healthier eating can facilitate governments' better understanding of the meaning of food consumption at the collective level. It can also support governmental strategies to discourage harmful products and related lifestyles.

Today, governments can primarily leverage two tools to encourage citizens to develop more favourable attitudes and behaviours toward healthier food. First, they can impose time limits on television, social media or press advertising to shield individuals and children, in particular, from unhealthy food categories. However, this has had admittedly limited results so far, and difficulties exist in evaluating the impact in the long term (Rossiter, 2019). Singapore proposed a total ban on unhealthy food advertising, and this could have a bigger impact on unhealthy product categories, push food manufacturers to rethink their strategies and lead the way to different and more resourceful dietary products (Duruz & Khoo, 2014). Second, they can impose taxes (e.g., sugar tax) on specific unhealthy food items; often, manufacturers, in turn, pass these costs to the final consumer. We can recognise the operational constraints of such regulations, but we must also acknowledge the clear cost burden of not proactively safeguarding health combined with the fiscal pressure of caring for an ageing population.

The literature on food consumption in Asian countries is fragmented and often analyses exceptional issues or groups, rather than the average consumer's day-to-day concerns (De Jong et al., 2017; Johar, Maruyama, & Truong, 2017; Mazzocchi et al., 2015; Perez-Cueto,- 2019; Pingali, 2007; Thomson et al., 2017). In view of our model's results and in the specific case of Singapore, where over 98% of all food products are imported, the data further mitigate the results by showing the effect of two control variables—attitudes and lifestyle vulnerability—on the relationship between SN and PV. These aspects demonstrate the difficulties consumers encounter when making daily choices regarding healthier food. They reveal that consumers are in search of own their limits and ready to welcome a greater role for government policy and control to drive their eating behaviours.

Our study results also show the relationship between PU and PV is affected by gender, suggesting the need for different discourses other than a one-size-fits-all strategy (Andrée, Clark, Levkoe, Lowitt, & Johnston, 2019; Bisogni, Bostic, & Sobal, 2016; Carlson & Chappell, 2015). Indeed, as Zee Yoong Kang, the chief executive of The Health Promotion Board (HPB) in Singapore, stated, "the average person may not easily grasp the distinction between 'healthy' and 'healthier' choice […] but there are very few absolutes in food […] there is no intrinsically good food…everything is about moderation and balance" (Lai, 2017). As such, healthier choices are evolving and must be continuously reviewed; this will justify the continued investigation into the social drivers of healthier food consumption. We highlight here the HPB is well positioned to partner others within the industry (e.g., the Healthier Dining Programme (HDP), Healthier Ingredient Development Scheme (HIDS) or FoodSteps program) to expand the range of healthier alternatives. These schemes indeed support industry players in areas such as product development and trade promotions. In doing so, Senior Minister of State for the Environment and Water Resource Dr Amy Khor added that "getting them [consumers] to switch when young is important 'as it can help create lifelong preferences for healthy foods and hence better health'" (Chi, 2019). These approaches may encourage food manufacturers to innovate and market a wider variety of healthier ingredients and products suited to local tastes.

6 | CONCLUSION

In Singapore, within mainly urban conditions, for the sake of consumers interests, it is important to consider and recognise the efforts accomplished by wider stakeholders ranging from policy makers, environmental NGOs to marketers in promoting healthier food (Sonnino, 2019). Collectively, the overall aim is to valorise consumers' progress along their erratic long journeys to encourage the dialogue that must arise for everyone's greater well-being through innovative, useful products. In order to understand the sociocultural embeddedness of food consumption, we must delve into the drivers of the PV of healthier food considering that when leveraging these drivers, policy makers and consumers can act on longer-term causes toward justifiable healthier eating (Kristensen, Lim, & Askegaard, 2016; Lin, 2020).

A good starting point in challenging consumers' attitudes about and advocating for consuming healthier food involves investigating the proven internalisation of social norms and the strength of PU of healthier eating in light of the common stereotypes of food based on high cost, bad taste and longer cooking times. As the Covid-19 crisis has shown, food governance needs to be revisited beyond the illusion of global sourcing and unlimited choice. Indeed, consumers and policy makers seem to have underestimated the importance of the internalisation of social norms and overplayed the importance of social desirability considerations. As evidenced in this study, there is no intrinsically good food; everything is a question of moderation, balance and socialities that underlie food consumption. Therefore, PV of food choice would benefit from a further examination with a greater variety of participants and settings. Indeed, the study is only conducted in one country and would require duplication elsewhere, if possible, leveraging a sampling procedure that allow for stronger conclusive results.

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ENDNOTE

[1] Among the net importers of food in 2019, we find countries such as Russia, Finland, Sweden, the UK, Italy, Germany, Portugal, and Japan.

DATA AVAILABILITY STATEMENT

Data available on request due to privacy/ethical restrictions.

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