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The cultural acceptance of digital food shopping: conceptualisation, scale development and validation

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Abstract

Purpose – The purpose of this paper is to provide an alternative framework that will assist in understanding the adoption of digital food shopping. The coronavirus disease 2019 (COVID-19) pandemic has exacerbated the demand for digital shopping, but the adoption of digital shopping for food has not accelerated as fast as in other product categories. This study considered the role of socio-cultural factors to understand the reason for slow adoption of digital technology to access food. A cultural framework that can be used to investigate socio-cultural factors in this context was lacking, however, this paper provides a discussion of social and cultural factors and developed measurement scales to assist in understanding cultural change acceptance in consumers' adoption of digital technology to purchase food.

Design/methodology/approach – Using Hayes' process analysis, this paper investigated how cultural acceptance – mediated by consumer affection and appeal and measuring the moderated effects of digital trust (DT) – determined the eventual impact on consumer intention to adopt digital food retailing. This paper also considered moderated mediation with parallel mediations (consumer affection and appeal, digital convenience (DC) and consumer digital readiness) interacting with DT and consumer learning.

Findings – The authors found that cultural acceptance of digital technology (CADT) is an antecedent to the adoption of digital shopping for food, but this is also mediated by consumers' appeal and affection for digital technology and consumers' digital readiness.

Practical implications – This study also indicates that DT influences consumer appeal and affection (CAA), especially amongst female consumers.

Originality/value – The paper represents an empirical investigation of a new conceptual framework that considers socio-cultural factors to understand consumers' use of digital technology in food shopping which has been an existing knowledge gap in current literature.

Keywords Cultural acceptance, Digital food retailing, Consumer behaviour, Digital trust, Consumer appeal and affection, Digital convenience

Paper type Research paper

Introduction

Digital technology is transforming retail and distribution channels, creating new cross channel options for food (Dannenberg *et al.*, 2020), entertainment (Gong *et al.*, 2015), apparel (Devderea and Toader, 2018), insurance (Nathan, 2019) and many other industries. Driven by the adoption

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of Internet-enabled technology (Gong *et al.*, 2015), the rise in digital retailing presents an opportunity, not a threat, according to Pantano and Dennis (2019). There are opportunities for consumers, because the interactive Internet and mobile technology – together with augmented reality – improves consumer experiences, allowing for immersion and cognitive and emotional involvement, which can result in satisfaction and engagement with the technology (Pantano and Dennis, 2019; Parise *et al.*, 2016). For retailers, the introduction of new and innovative digital technologies has contributed to making retail management more efficient at different levels of store operations (Demirkan and Spohrer, 2014), as well as providing the opportunity to capture consumer behavioural data whilst delivering innovative consumer experiences that also maintain the business's competitive advantages (Pantano and Dennis, 2019).

The COVID-19 pandemic has further stimulated the increase in retail digitalisation as a consequence of governments' stay-at-home policies (Dannenberg *et al.*, 2020). This has resulted in changes in consumption patterns, with a major increase in online trading for various products and services (Dannenberg *et al.*, 2020; Faiers, 2021). Regarding food purchasing, online retail giants such as Amazon Fresh found that new customer usage increased by as much as 500% in some countries (Wallstreet Online, 2020).

The question remains, however, of whether consumers will continue to shop for food online once the temporary stimulus caused by COVID-19 ceases. Pre-pandemic, consumers were initially sceptical of digital food shopping (Anesbury *et al.*, 2016; Dannenberg *et al.*, 2020; Halzack, 2015; Ring and Tigert, 2001). Whilst the pandemic inducement may result in a new phase of growth in this market, Dannenberg *et al.* (2020, p. 555) anticipate a "narrowing of the window of opportunity", and we argue that a digital food shopping environment will continue to exist, but the motivating factors and influences affecting consumer behaviour needs to be understood. Pre-pandemic, a survey conducted with a sample population of 1,034 Canadian consumers indicated that only 12.8% of consumers shopped for groceries online, whilst 77% of them indicated their preference to purchase food was in-store (Thomas-Francois and Somogyi, 2021, 2022). This evidence indicates that consumers have a strong preference for shopping instore for groceries which motivates the need to further investigate the factors that influences alternative behaviour. Social factors may be influencing this behaviour (Boerwinkel, 2016) but there is currently a lack of literature on these social factors. Consequently, a framework that is specific to the adoption of new technologies related to accessing food digitally is needed.

Understanding consumer behaviour patterns and the factors impeding advancement in digital food retailing provide ample opportunity for research, as this subfield is in its early stages (Wang and Somogyi, 2018, 2019) and previous research such as the Technological Acceptance Model (TAM; Davis, 1985; Davis *et al.*, 1989) has been used to gain an understanding of how consumers adopt digital food retailing. The TAM model has been critiqued as limited, as it does not consider the social factors affecting technology adoption. Society and sociocultural influences are known to affect consumer behaviour (Boerwinkel, 2016). Studies have alluded to the impact of social influence (Campbell, 2013; Driediger and Bhatiasevi, 2019; Giovanis *et al.*, 2019), and this paper attempts to extend the literature by testing a conceptual framework presented by Thomas-Francois and Somogyi (2021, 2022) in order to address this knowledge gap. It also sought to develop new latent constructs that allow for further insight into the sociocultural factors affecting food retail digitalisation. Using the process analysis of Hayes (2013), this paper investigated how cultural acceptance, mediated by consumer affection and appeal and moderated by digital trust (DT), impacts consumer intention to adopt digital food retailing. This paper also considered moderated mediation with parallel mediations and the interaction with DT and consumer learning.

Literature review

Digitalisation of food retailing – the new retail

Digital retail in its simplest form can be thought of as virtual shopping on an e-commerce platform (Narayanareddy *et al.*, 2016), with smart shopping using innovative computer technologies (Pantano and Dennis, 2019), or it may involve a combination of approaches, called the "New Retail" (Ding *et al.*, 2018), because digital environments allow for omnichannel activities. In marketing science, it is described as a technology infusion (Bitner *et al.*, 2000), where the propensity to embrace advance technologies is determined by technology type and demographic factors that relates to consumers technological readiness (Blut and Wang, 2020). As it regards to instore technology, technological infusion is considered from the perspective of the level of consumer convenience and social presence with corresponding triggers, such as involvement and imagery, enhancing sales (Grewal *et al.*, 2020). Pantano and Dennis (2019, p. 3) illustrate the concept of the digitalised service environment by describing the shopping "Servicescape" of a consumer as follows:

> On the Zara e-commerce website the consumer (1) finds and selects favourite clothes, (2) checks availability on the closest store, (3) enters the chosen store and picks the items, (4) goes directly to the fittings room to try, (5) takes some pictures and sends them to friends on WhatsApp and other social media to understand if the selected items fit their style, (6) approaches the self-service cash desk within the fitting rooms area to pay (credit card only), removes tags and alarms, and takes the shopping bag, (7) leave the store with the purchases, and (8) take a selfie with the purchase to share the shopping experience online. The customer can fully complete this process without any face-to-face interaction (with either employees or other consumers).

This process can be replicated with grocery shopping. Virtual grocery shopping is the purchase of food or personal use items via a food retail company's internet-based portal or application, with delivery to the consumer's home or designated delivery area or preparation for in-store pickup (Thomas-Francois and Somogyi, 2021, 2022, p. 325). Smart grocery shopping is the purchase of food and personal use items at a brick-and-mortar store without purchase directions, assistance or interference from employees but through the use of computerised information points, including self-checkout technology or mobile app checkout (Thomas-Francois and Somogyi, 2021, 2022, p. 326). Here, we consider digital food retailing as consumer access to food purchasing using the Internet and/or other digital technologies.

Theoretical premise

Thomas-Francois and Somogyi (2021, 2022) proposed an alternative to TAM, which has previously been used to explain the changes in consumer behaviour research in retail and marketing as it relates to new technology adoption. Originally developed by Davis (1985) and later modified (Davis, 1989; Davis *et al.*, 1989), TAM considered measurement constructs such as a technology's perceived usefulness and perceived ease of use and the resulting influence on user acceptance (Davis, 1989). The impact of beliefs and evaluation on attitudes were later included (Davis *et al.*, 1989) followed by subjective norms (Venkatesh and Davis, 2000). TAM's major limitation is a lack of understanding of the social influences that affect consumer behaviour (Amoroso and Magnier-Watanabe, 2012; Thomas-Francois and Somogyi, 2021, 2022). Social influence, including new culture adoption and cultural change, may have an even greater impact on consumer acceptance of digital retailing (Thomas-Francois and Somogyi, 2021, 2022, p. 328).

Literature has shown the social roles that impact technological acceptance and adoption of food shopping. For example, Driediger and Bhatiasevi (2019) have acknowledged the role of social norms as a contributory factor in online grocery shopping in Thailand. Similarly, Campbell (2013) highlighted the influence of subjective norms in differentiating the

behaviour of Hispanic and Caucasian shoppers, and examined the role of society, family peers and the influence of other people's culture on the different groups' behaviour.

Several models and extensions of existing models have been used to determine and explain consumer adoption of digital technology. These include TAM, Theory of Planned Behaviour, the Innovation Diffusion Theory and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Giovanis *et al.*, 2019). Many of those theories have highlighted the need for an inclusion of social factors. For instance, Boudkouss and Djelassi (2021) provided an alternative approach to TAM utilising gratifications theory and mentioned that the sustainability of instore digital and interactive technologies is impacted by consumers' usage and that even with the use of interactive kiosk and self-checkouts, consumers may be seeking social interactions in their purchasing experience.

Giovanis *et al.* (2019) extended the UTAUT to include factors influencing the adoption of mobile self-service retail banking technologies, including social factors such as the opinions and influence of other consumers. Driediger and Bhatiasevi (2019) incorporated subjective norms with other TAM constructs to determine consumers' acceptance of online retailing and Thomas-Francois and Somogyi (2021, 2022) extended TAM to include such factors. However, previous consumer technological adoption models have not considered the impact of culture or "way of life" in society as an antecedent to technological acceptance factors. According to Djelassi *et al.* (2018), little is known about the impact that culture has on consumers, even in comparing cultures of different countries. Zhang *et al.* (2018) found that national culture plays a moderate role on "influential factors" and consumers' behavioural intention to use electronic banking. Exploring cultural values was mentioned as an imperative to understand and encourage new technological adoption (Zhang *et al.*, 2018).

The importance of the impact of social factors influencing purchasing behaviour and the acceptance of new shopping technology has been acknowledged (Nicholls, 1997; Driediger and Bhatiasevi, 2019; Giovanis *et al.*, 2019). However, there is a paucity of research on the impact of social factors impacting food shopping, particularly a lack of measurement constructs that can be used to probe further into this phenomenon. In the next section, we, therefore, discuss the theoretical foundation of cultural change acceptance.

Theoretical foundations of cultural change acceptance

Social theory

Social theory seeks to develop a meaningful interpretation of the social world (Blumer, 1954, p. 3). Sociology is thus the science that strives to interpret and understand social actions to derive causal explanations for its course or effects, where "action" includes all human behaviour (Weber, 1942). In a changing society it is essential to revisit and clarify basic social values, modes of living and social relationships (Blumer, 1954). According to Weber's typologies, social action can take the forms of human rational responses to the orientation of a system, based on traditional behaviour, as well as purely affectual behaviour and orientation of actions based on absolute self-conscious values (Weber, 2003).

Cultural change acceptance

Individuals, groups and society's social action eventually impact culture. The cultural framework of Schwartz (1994) focusses on social factors such as the state of being in one-on-one relationships as well as in group relationships whilst also considering responsible and acceptable behaviour in society. Boerwinkel (2016), whilst investigating the role of the cultural dimension as an influencer in online retailing, compared the differences in cultures between two countries and was able to show the impact of culture as a determinant, but the major limitation to further investigating the phenomenon is the sparsity of literature on

cultural dimensions affecting retail as well as the limited scope of existing studies. Innovation and digital transformations have had an impact on digital culture spheres which have, in turn, contributed to changes in patterns of behaviour and preferences (Arsenijević and Arsenijević, 2022). Sociocultural dimensions during this time of digital revolution and transformation have also been noted to change people's attitudes towards social norms (Omarova *et al.*, 2021). Sorokin (1937, p. 3) defines culture as "the sum total of everything which is created or modified by the conscious or unconscious activity of two or more individuals interacting with one another or conditioning one another's behaviour". Cultural change involves the cyclical socio-cultural fluctuations that are recurrent processes in social and cultural life and in human history (Sorokin, 1937, p. 153), and such change can often reverse its direction and repeat itself, but with current themes and new variations (Sorokin, 1937, p. 2). Based on this premise, we postulated that consumers are likely to accept new digital modalities of food shopping that meet their needs, especially modes that make their existing ways of life easier (Thomas-Francois and Somogyi, 2021, 2022).

The socio-cultural conceptual framework by Thomas-Francois and Somogyi (2021, 2022, p. 8) proposed two opposing responses from consumers to the adoption of virtual and smart food shopping. These are cultural change resistance and acceptance, which are affected by the socio-cultural environment, including influencers such as family, friends, individuals and the community, as well as media, firms and perceived risk. Cultural change acceptance affects other causal factors such as affective pull, cognitive (rational) pull and appeal and trust. This framework presented a foundation on which we explored the development of new measurement constructs. Cultural change acceptance, consumer affection and appeal, DT, as well as other elements outside of the framework but relevant to the investigation, such as digital convenience (DC) and consumers' digital readiness (CDR), were also validated by this study (See Tables 1 and 2). Established scales for consumer learning (Shaw, 2014) and behavioural intention to adopt new technologies (Chemingui and lallouna, 2013) were also incorporated in the analysis.

Theoretical framework

Based on the above literature and the theoretical propositions deduced from Thomas-Francois and Somogyi (2021, 2022), this study investigated the following hypotheses, which are illustrated in the theoretical framework above. The relationship between the cultural acceptance of digital technology (CADT) and consumer intention to adopt digital food shopping (ITAD) is mediated by consumer appeal and affection (CAA), CDR and DC. Further, we hypothesised that DT and consumer learning independently serve as moderators between the three individual mediators and ITAD shopping. In the next section, the process of scale development is presented, followed by the research methodology of the regression-based process analysis and the study's results.

Development of measurement scales

Guided by scale development and validation as described by Boateng *et al.* (2018), we began the process of generating items based on the amalgamation of the relevant literature together with information collected via 12 multi-purposed, semi-structured interviews with key stakeholders, including academics, retailers, government policymakers and food distributors. The amalgamated literature facilitated the validity of the items generated and the validity of their content was also assessed (Boateng *et al.*, 2018) considering the definitions of latent constructs. Content validity ascertains the adequacy with which the measure assessed represents the domain of interest (Hinkin, 1995) and this process assists with understanding those domains (Hunt, 1991) and was supported by the inductive method

Constructs	Literature context	Sources
Cultural Acceptance	Food adoption across cultures	Akissoé *et al.* (2015), Giraud *et al.* (2013) and Hong *et al.* (2014)
	Impact of values, beliefs and attitudes on participation in new system of care	Lan *et al.* (2019)
	Introduction of new technique in administering patient care	Al-Khathaami *et al.* (2015)
Digital Convenience	Convenience originally ascribed to products and their ease of use	Berry *et al.* (2002), Seiders *et al.* (2000) and Pham *et al.* (2018)
	Access, search, evaluation, transaction convenience, possession and post–purchase convenience	Jiang *et al.* (2013)
	Convenience effect of lowering cognitive, emotional and physical burdens on benefactors	Chang *et al.* (2012)
Consumer Appeal and Affection	Appeal interpreted as the physical attractiveness of shopping environments	Bell (1999) and White and Manning (1998)
	Used in the context of messaging and promotions	Hyllegard *et al.* (2005, 2010)
	Product appeal - rational and emotional motivation, utilitarian goals, hedonic goals consumer	Liao *et al.* (2009) and Shirai (2015)
	product appeal– sensory or normative appeals	O'Neill *et al.* (2019), Hultén (2012) and Cialdini and Trost (1998)
	Consumers' reactions based on preferences or personal interests	Verbeke *et al.* (2009) and Wohlfeil *et al.* (2019)
	Consumers' emotional and cognitive influences are known to affect behaviour	Verweij and Senior (2015), Stanovich and West (2000) and Thomas-Francois and Somogyi (2021, 2022)
Digital Trust	Digital commerce within digital communities. Trust in the online community	Levine (2019)
	Sharing economies, providing security or routes of authentication and verification	Sundararajan (2019)
Consumer Digital Readiness	Consumer's ability to accept and transition to changing digital technology	Ma *et al.* (2012)
	People's propensity to embrace and use new technologies	Parasuraman (2000, p. 308) and Parasuraman and Colby (2015)

Table 1.
Constructs in existing literature and context

gained via the individual interviews (Morgado *et al.*, 2017). The combination of both deductive and inductive methods to define domains is considered a sound practice (Boateng *et al.*, 2018).

Following a review of all of the questions, the questionnaire was pre-tested with 32 respondents outside of the full sample populations. This process ensured that items presented to the pre-test sample were meaningful and properly worded prior to administering the full survey (Boateng *et al.*, 2018). We later administered two surveys as a replication strategy to test the constructs we were investigating. The first survey was administered to a representative sample population of 300 respondents (Guadagnoli and Velicer, 1988). We replicated the survey with a sample of 615 respondents (Comrey and Lee, 1992). The pool of items per latent construct in the first survey was twice as much and for some constructs three times as much compared to the desired final scale (Kline, 1993; Schinka and Velicer, 2012). This allowed for the requisite margin to select an optimum combination of items whilst capturing the respondents' experiences (Schinka and Velicer, 2012). Items were all presented on seven-point scales to increase reliability (Kronsik and Presser, 2009). The first study

Constructs	Proposed definitions
Cultural Acceptance	Is the approval of a phenomenon measured by the sum of the conscious or unconscious behaviour by society that determines new ways of life through norms, values, knowledge and codes of conduct in the context of a cultural framework and time
Digital Convenience	Can be described as the ease of transactional access due to digital technology that allows consumers to complete activities in a manner that saves time and reduces any type of burden on the consumer whether emotional, cognitive or physical
Consumer Appeal and Affection	Is related to consumers' emotional or rational decision to be compelled towards a product, service, system or activity due to sensory, emotional, rational or normative reasons. **Consumer Affection** acknowledges consumers' states of being or acts that are related to their emotions in decision-making and, ultimately, behaviour
Digital Trust	Is consumer's confidence in a digital partner's, business' or institution's commitment (written/unwritten) to prevent all sources of harm that may arise in transacting business between the two parties (consumer and partner/business/institution)
Consumer Digital Readiness	Describes the state of consumers' preparedness and willingness to operate fully in the digital economy or space to the extent that the use of digital technology is integrated in their way of life

Table 2.
Proposed definitions of measurement constructs

yielded eight factors, which were determined through exploratory factor analysis (EFA) in Statistical Package for Social Science (SPSS) (Janssens *et al.*, 2008). The items were then replicated in the second survey. Due to low factor loadings (0.6 and lower), researchers omitted one factor.

To further identify the latent variables, we conducted confirmatory factor analysis (CFA). According to Morin *et al.* (2016, p. 117), a confirmatory approach to psychometric measurement allows comparison of an alternative *a priori* factor structure based on fit assessment procedures and estimation of the relationships between latent constructs corrected for measurement errors. We used IBM Amos Software 26 with the application of maximum likelihood estimation (ML) to estimate the parameters of the model (Arbuckle, 1997, 2016) and adhered to the CFA procedures satisfying all requirements of uni-dimensionality, convergent validity, reliability and discriminant validity after a few modifications (Janssens *et al.*, 2008). To further confirm discriminant validity, the Heterotrait Monotrait Ratio test was conducted. All constructs were found to be distinct with scores <0.90 (Henseler *et al.*, 2015). CFA Reliability and Validity Measures and Cronbach Alpha for Phase 2 of Scales Developed were achieved *(See finals scales Appendixes A)*. Uni-dimensionality was attained; all latent variables gauged factor loadings >0.05 and critical ratio = *t*-value >1.96, yielding a goodness-of-fit statistic $\chi^2 = 703.9$ (2.335 degrees of freedom that is $\chi^2/\text{df} = 2.335 < 3$ indicating a good fit (Hair *et al.*, 2010). The *p*-value was <0.001. The comparative fit index of 0.979 >0 .90 cut off suggesting good fit, along with the Tucker–Lewis Index of 0.975 (Hu and Bentler, 1999). The root mean square error of approximation of 0.047 at the threshold of 0.05, standardised root mean square residual at 0.0311 (less than 0.08 cut-off) and incremental fit measures such as the normal fit index had a good fit at 0.965 (Forza and Filippini, 1998) and goodness-of-fit index and adjusted goodness of fit (with a 0.90 threshold) of 0.919 and 0.879/0.90, respectively (Jöreskog and Sörbom, 1989, 1993), thereby validating the fit assessment of the theoretical representation in the dataset. The indicators of the Comfirmatory Factor Analysis (CFA) model quality are as follows: $\chi^2/\text{df} = 2.35$; $p < 0.001$; Tucker-Lewis Index (TLI) = 0.975; Comparative Fit Index (CFI) = 0.979; Root Mean Square Error Approximation

(RMSEA) = 0.047, Standardized Root Mean Square Residual (SRMR) = 0.031, Normed Fit Index (NFI) = 0.965; The Goodness of Fit Index (GFI) = 0.919 and Adjusted Goodness of Fit Index (AGFI) = 0.90/(0.897).

Methodology

Procedure and sample description

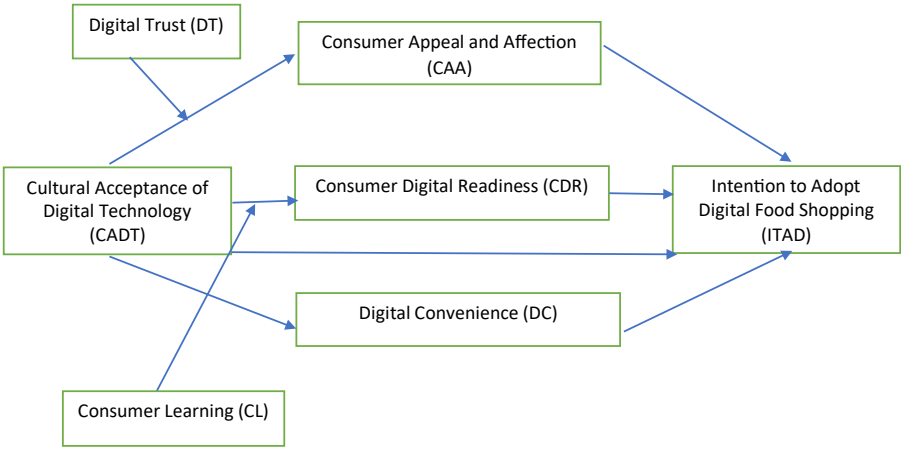
The second sample of 611 respondents was gained from a Qualtrics XM panel of Canadian consumers. The data were collected using simple random sampling to gain a representative sample during the period June 19 to 24, 2021. The sample consisted of 49% (298) males and 51% (313) females. The age groups of the sample population ranged from 18 to 24 (10.5%), 25–34 (19.3%), 35–44 (18.7%), 45–54 (16.3%), 55–64 (21.4%) and 65 and over (14.1%). The sample data represented respondents at different economic statuses: income levels ranged from less than $25,000 per annum per household (9.7%); $25,000–$49,000 (18.8%); $50,000–$74,999 (15.9%); $75,000–$99,999 (19.3%); $100,000–$149,000 (21.4%); more than $150,000 (8.7%) and the remaining respondents (6.2%) preferred not to respond. Respondents resided in the urban core of large cities (39.3%), suburbs (41.2%), small towns or rural areas (17.8%) and the remaining 1.6% preferred not to respond. Education levels ranged from high school degrees or less (18.3%) to PhD or professional degrees (3.4%) with the largest group holding a college graduate degree with bachelors (39.9%). For marital status, 28.5% respondents were single, 58.9% were married or in common law relationships, 10.3% were divorced or separated and 2.3% of respondents preferred not to respond.

All measurement constructs – CADT, CAA, CDR, DC, DT and consumers' ITAD which measured consumers' level of agreement – used seven-point Likert scales ranging from 1, *Strongly Disagree* to 7, *Strongly Agree*. Consumer learning was measured by frequency from 1, *Never* to 7, *Always*.

Results

Method

Regression-based process modelling for five models following Hayes (2013) was executed to test the theoretical framework illustrated in Figure 1 and included the effect of gender when



Note(s): Moderators were tested for all a' paths to the mediators

Figure 1.
Parallel multiple mediator model moderated by digital trust and consumer learning

considering DT as a moderator. Considering all regression assumptions, we used 5,000 bootstrap samples at a 95% confidence interval. Heteroscedasticity consistent standard error and covariance matrix estimators were also used for all models. The models investigated the multiple mediation or parallel mediation analysis followed by moderation mediation of DT, consumer learning and gender. The findings were reported for four models, as consumer learning was not found to be a significant moderator.

Presentation of results

The findings in Table 3 show that CADT is the antecedent to ITAD ($\beta = 0.174$, $t = 3.16$, $p \leq 0.01$). The results of the mediation analysis showed that CADT was related to CAA and CDR, which in turn were also significantly correlated with ITAD (all $p \leq 0.001$). These results indicated that the relationship between CADT and ITAD was partially mediated by CAA and CDR, respectively. Table 3 shows the bootstrapped 95% confidence interval (CI), which indicates that the indirect effects of each of the two mediators were significant. However, DC was not found to be a significant mediator, as the indirect effect was not significant. The variance in ITAD is accounted for by an $R^2 = 0.769$ for the model.

In the investigation of moderated mediation, CAA was also confirmed as a significant mediator. In Table 4, the results showed the moderated mediation analysis when treating CAA as the mediator and DT as the moderator in the relationship between CADT and CAA. The interaction effects between CADT and DT was significant ($\beta = 0.63$, $t = 2.61$, $p < 0.01$). DT was therefore found to be a significant moderator. The moderated mediation had an index of 0.045 and bootstrap 95% CI = (0.0123, 0.0825), which therefore proved favourable moderated mediation. The results indicated that DT significantly moderated the indirect effects of CADT and ITAD. The coefficients showed that the path between CADT and CAA are simple slopes computed at −1 SD (low), the mean and +1 SD (high) on DT. The effect of DT as moderator under different levels of the CAA can be seen in Figure 2. The conditional indirect effect of CADT on ITAD are at the following three levels, respectively, IE = 0.154, IE = 0.208 and IE = 0.262 and are statistically significant.

The effect size of the moderation provided a statistically significant change in $R^2 = 0.0058$. As recommended by Hayes (2013), to further probe into the interaction, the test for statistically significant transition points using the Johnson–Neyman method was undertaken. This test indicated that the interaction between CADT and CAA between statistically significant and nonsignificant is at a DT level of −2.82. Above this level of DT, there is a significantly positive two-way interaction between the two variables. That means that there is a statistically significant difference in CAA only when their DT is at levels of −2.82 and above. As shown in Figure 3, below, above −2.82 the conditional effect of CADT increases as levels of DT increases.

						Bootstrap results – Indirect effects			
Constructs	β	SE	t	p	Constructs	Effect	SE	LL 95% CI	UL 95% CI
CADT → CAA	0.766	0.062	12.30	<0.001	CAA	0.548	0.055	0.562	0.826
CADT → CDR	0.836	0.052	15.96	<0.001	CDR	0.145	0.046	0.059	0.240
CADT → DC	0.712	0.051	14.03	<0.001	DC	−0.001	0.028	−0.058	0.055
CAA → ITAD	0.715	0.040	17.99	<0.001					
CDR → ITAD	0.174	0.054	3.20	<0.01					
DC → ITAD	−0.002	0.042	−0.04	ns*					
CADT → ITAD	0.174	0.055	3.16	<0.01					
Total Effect	0.8649	0.055	15.54	0.001					
Model's R^2 0.769									

Note(s): ns* not statistically significant

Table 3.
Model 1. Multiple mediation analysis

Constructs	β	SE	t	p
CADT	0.305	0.528	5.78	<0.001
DT	0.716	0.493	15.96	<0.001
CADT * DT	0.063	0.024	2.61	<0.01
Component's R^2			0.484	

Bootstrap results – Conditional indirect effects and index of moderation mediation

Constructs	Moderator level (DT)	Effect	SE	LL 95% CI	UL 95% CI
CADT→	−1SD	0.162	0.045	0.079	0.255
CAA →	Mean	0.218	0.054	0.124	0.334
ITAD	+SD	0.274	0.069	0.156	0.427

Index of moderated mediation

Moderator	Index	SE	LL 95% CI	UL 95% CI
DT	0.045	0.177	0.0123	0.0825

Note(s): CADT*DT interaction between focal predictor and moderator
CADT - cultural acceptance of digital technology; CAA - consumer appeal and affection; CDR - consumers' digital readiness; DC - digital convenience; DT - digital trust; ITAD - consumers' intention to adopt digital food shopping

Table 4.
Model 2. Moderated mediation analysis treating digital trust as the moderator

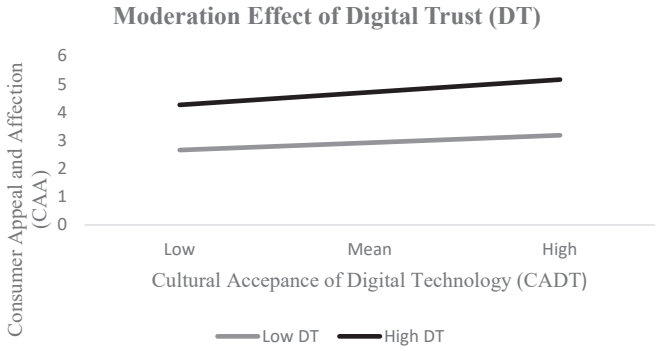


Figure 2.
Simple slopes moderation effects of digital trust

Tables 5 and 6 report on the investigation into gender difference and showed the moderated effect of DT between CADT and CAA is not significant amongst males, but does appear amongst females. The index of moderated mediation was 0.050 and bootstrap 95% CI = (0.025, 0.106) indicating that moderation mediation existed. The conditional indirect effect of CADT on ITAD are at the following three levels, −1SD, mean and +SD, respectively, IE = 0.161, IE = 0.223, IE = 0.285 and are statistically significant. The moderation value for DT defined by the Johnson–Neyman significance region showed statistical significance at −1.337 and above. This means that, for females, DT moderates CAA at that point and above.

In summary, the study found that the cultural acceptance of digital food shopping is a main antecedent to future adoption. The drivers mediating the future adoption of digital food shopping are consumers' affection and appeal to this mode of food shopping as well as their digital readiness to embrace the technology. One of the key factors that influence consumers' commitment to digital food shopping is DT which was impacted by gender. Males' adoption of digital technology is not affected by DT, however, for females, lower levels of trust will negatively affect adoption.

Discussion

Based on this study CADT affects consumers' responsiveness to the adoption of digital food retailing. Cultural acceptance is not only relevant to consumers' food preferences

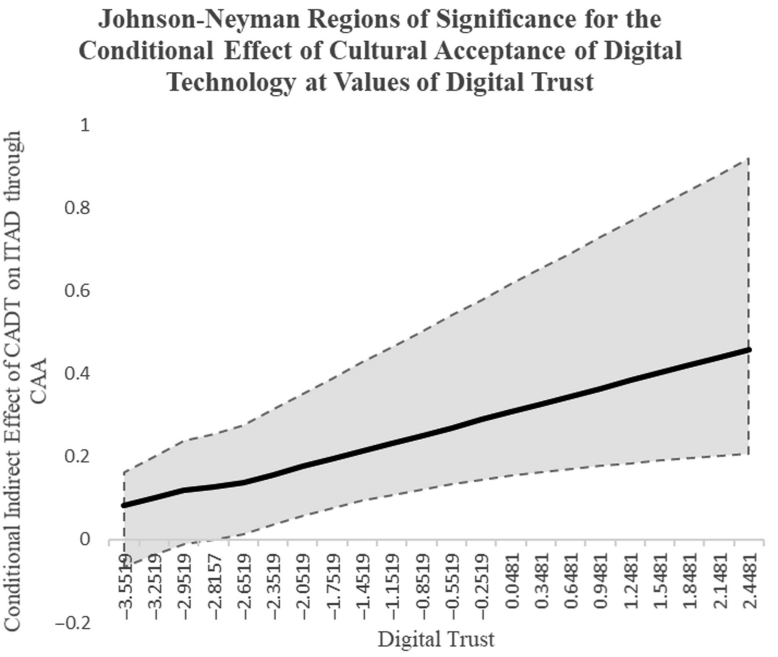


Figure 3.
Illustrating John-Neyman significance region

(Akissoé *et al.*, 2015; Giraud *et al.*, 2013; Hong *et al.*, 2014) and their willingness to incorporate technology in medical care (Al-Khathaami *et al.*, 2015; Lan *et al.*, 2019), but it also is a significant predictor of consumers' behavioural intentions to adopt digital modes of food shopping.

The study has also shown that the target population must also be in a state of readiness to adopt digital food shopping. However, the most important contributing factor for this new mode of food shopping is CAA. Whilst DC may be relevant, it does not directly affect consumers' behavioural intentions. DT is also more important as an influencer on adoption intentions than consumer learning about the technology.

To draw consumers into these new food shopping modes, rational and emotional appeal service marketing methods can be used. These may be achieved using extensive

Table 5.
Model 3. Moderated mediation analysis treating digital trust as the moderator by gender (Female; $N = 313$)

					Bootstrap results – Conditional indirect effects and index of moderation mediation					
Constructs	β	SE	t	p	Constructs	Moderator level (DT)	Effect	SE	LL 95% CI	UL 95% CI
CADT	0.300	0.133	2.25	<0.05	CADT→	−1SD	0.161	0.073	0.052	0.328
DT	0.774	0.105	7.41	<0.001	CAA →	Mean	0.223	0.085	0.095	0.425
CADT * DT	0.066	0.400	1.67	ns*	ITAD	+SD	0.285	0.105	0.129	0.535
					Index of moderated mediation					
					Moderator		Index	SE	LL 95% CI	UL 95% CI
					DT		0.050	0.026	0.0025	0.106
Component's R^2			0.503							

Note(s): CADT*DT interaction between focal predictor and moderator

Constructs	β	SE	t	p
CADT	0.304	0.108	2.83	<0.05
DT	0.662	0.083	8.02	<0.001
CADT * DT	0.066	0.038	1.67	ns*
Component's R^2	0.503			

Bootstrap results – Conditional indirect effects and index of moderation mediation

Constructs	Moderator level (DT)	Effect	SE	LL 95% CI	UL 95% CI
CADT→	−1SD	0.154	0.056	0.052	0.277
CAA →	Mean	0.208	0.067	0.092	0.334
ITAD	+SD	0.262	0.088	0.114	0.455

Index of Moderated Mediation

Moderator	Index	SE	LL 95% CI	UL 95% CI
DT	0.043	0.024	−0.001	0.0934

Note(s): CADT*DT Interaction between Focal Predictor and Moderator
CADT - cultural acceptance of digital technology; CAA - consumer appeal and affection; CDR - consumers' digital readiness; DC - digital convenience; DT - digital trust; ITAD - consumers' intention to adopt digital food shopping

Table 6.
Model 4. Moderated mediation analysis treating digital trust as the moderator by gender (Male; $N = 298$)

messaging and promotion, which have long been considered useful in persuading consumers to a particular behaviour (Hyllegard *et al.*, 2005, 2010; Liao *et al.*, 2009). These considerations have major managerial implications for food retailers, who should be mindful of long-term consumer behaviour, because significant capital investments have been made into these new modes of food retailing, particularly during the pandemic (Powell, 2020).

Whilst CAA was the most significant impetus for the adoption of digital food shopping, the study has shown that DT has a significant influence on CADT and CAA. A high level of DT results in stronger CAA, whereas the contrary is likely to result in a lack of ITAD. Females are particularly sensitive to this effect. The service marketing and promotions strategies employed must therefore target females in a manner that conveys the trustworthiness of this new food shopping mode. Researchers such as Tarik and Adnan (2018, p. 55) believe the idea of an "online society" is still farfetched and that human interaction will remain, with a combination of traditional and online contact. However, with the introduction of new forms of digital products and services across sectors from food to digital art, we believe that the scales developed in this paper will provide a useful springboard for future investigation not just into food business research, but in other industries as well.

Theoretical and practical implications

Whilst previous research has not considered the role culture plays in adoption as antecedental to other factors in adopting new retail technology, this study shows that cultural acceptance of the digital technology used in food shopping strongly contributes to adoption. This represents the main theoretical contribution of the study. Cultural change acceptance may then influence other contributory factors such as consumers appeal and affection to a new way of shopping, their digital readiness and what they consider convenient.

Consumers can be in a state of readiness to use and interact with digital technology, suggesting the importance of mental focus as well as technological literacy. From a practitioner perspective, this requires retailers to make investments in digital technology that is intuitive to use. According to Grewal *et al.* (2021) retailers' investments must be strong in capabilities and possess sufficient "know-how" to meet consumers' needs. Consumer affection and appeal was also found to be the most important mediating factor impacting the intention to adopt. Retailers' efforts may begin by appealing (rationally or emotionally) to segments of consumers with favourable attitudes and intentions for

instance, the Enthusiasts and Potentials as noted by Thomas-Francois and Somogyi (2021, 2022). Appealing to digitally savvy millennials and Gen Z's who are more digitally adept in the use of smart technologies (Gielens *et al.*, 2021) is likely the most streamlined approach to widespread adoption.

This study also shows that consumers trust in the management of technology particularly from a data security perspective is critical (Shankar *et al.*, 2021). High levels of DT by consumers results in stronger affection and appeal, whilst low levels of DT results in the lack of intention to adopt. Females were found to be more sensitive to this effect and there is discussion that females are more emotionally responsive than men (Brody, 1997; Bradley *et al.*, 2001). The effect of cultural acceptance on digital technology and consumer affection and appeal in females through this lens suggests some practical adjustments in marketing approaches. Marketers of new technology advancements for digital food shopping may use functional appeals for males, whilst an emotional appeal that includes emphasis on safety and data security focus for females.

Limitations and recommendations for future research

This paper presented an investigation of a new theoretical framework in retail but also marketing science since retail provide the environment in which marketing decisions are made Kaynak and Cavusgil (1982, p. 249), albeit it has been tested with panel data from only one country. A multi-country investigation would be useful to further validate the model. Another limitation of this study is the period in which the data were collected – i.e. during the COVID-19 pandemic. It would be useful to collect data after this period to determine any changes in consumers' behavioural intention.

The digital economy is continuously evolving, with food retailers heavily investing in the technology and the impetus for further growth in this area, spurred by the pandemic, may result in accelerated changes in consumer behaviour. Put simply, will food consumers still want digital forms of food shopping post-pandemic? We suggest that future studies further investigate this area, especially with exploratory qualitative approaches that could provide greater depth in understanding consumer changes. Further investigation of the phenomena is needed because food purchasing behaviour appears to be different from that of other products.

The study did not investigate consumers who may partially adopt digital retailing through omnichannel activities (Verhoef *et al.*, 2015; Hubner *et al.*, 2016). For example, consumers may use online platforms to investigate products but choose not to shop online due to instore appeals and preferences or other instore digital options. Future research could examine the impact of omnichannel experiences on digital retailing adoption.

Declaration of interest statement

Authors have no financial interest or benefit arising from the application of this research.

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

We confirm that we have given due consideration to the protection of intellectual property associated with this work and that there are no impediments to publication, including the timing of publication, with respect to intellectual property. In doing so, we confirm that we have followed the regulations of our institutions concerning intellectual property.

We further confirm that any aspect of the work covered in this manuscript that has involved human participation has been conducted with the ethical approval of all relevant

bodies and that such approvals are acknowledged within the data collection process. This research has been approved by research ethics board of the University of Guelph (REB#19-07-020). If you have any question regarding ethical approval of this research please contact: Director, Research Ethics; University of Guelph; reb@uoguelph.ca; (519) 824-4120 (ext. 56606).

References

Akissoé, N.H., Sacca, C., Declemy, A.-L., Bechoff, A., Anihouvi, V.B., Dalodé, G., Pallet, D., Fliedel, G., Mestres, C., Hounhouigan, J.D. and Tomlins, K.I. (2015), "Cross-cultural acceptance of a traditional yoghurt-like product made from fermented cereal", *Journal of the Science of Food and Agriculture*, Vol. 95 No. 9, pp. 1876-1884, doi: 10.1002/jsfa.6892.

Al-Khathaami, A., Alshahrani, S., Kojan, S., Al-Jumah, M., Alamry, A. and El-Metwally, A. (2015), "Cultural acceptance of robotic telestroke medicine among patients and healthcare providers in Saudi Arabia. Results of a pilot study", *Neurosciences (Riyadh, Saudi Arabia)*, Vol. 20 No. 1, pp. 27-30.

Amoroso, D. and Magnier-Watanabe, R. (2012), "Building a research model for mobile wallet consumer adoption: the case of mobile Suica in Japan", *Journal of Theoretical and Applied Electronic Commerce Research*, Vol. 7 No. 1, pp. 94-110.

Anesbury, Z., Nenycz-Thiel, M., Dawes, J. and Kennedy, R. (2016), "How do shoppers behave online? An observational study of online grocery shopping", *Journal of Consumer Behaviour*, Vol. 15 No. 3, pp. 261-270, doi: 10.1002/cb.1566.

Arbuckle, J. (1997), *Users' Guide, Amos Version 3.6.*, Small Waters Corporation, Chicago, IL.

Arbuckle, J. (2016), *Amos 18 User's Guide, SPSS Incorporated*, Wiley Online, London.

Arsenijević, J.M. and Arsenijević, O.M. (2022), "Changing the cultural paradigm in the digital age", *Baština*, Vol. 56, pp. 241-255, doi: 10.5937/bastina32-36183.

Bell, S. (1999), "Image and consumer attraction to intraurban retail areas: an environmental psychology approach", *Journal of Retailing and Consumer Services*, Vol. 6 No. 2, pp. 67-78.

Berry, L., Seiders, K. and Grewal, D. (2002), "Understanding service convenience", *Journal of Marketing*, Vol. 66 No. 3, pp. 1-17, doi: 10.1509/jmkg.66.3.1.18505.

Bitner, M., Stephen, B. and Meuter, M. (2000), "Technology infusion in service encounters", *Journal of the Academy of Marketing Science*, Vol. 28 No. 1, pp. 138-149.

Blumer, H. (1954), "What is wrong with social theory?", *American Sociological Review*, Vol. 19 No. 1, pp. 3-10.

Blut, M. and Wang, C. (2020), "Technology readiness: a meta-analysis of conceptualizations of the construct and its impact on technology usage", *Journal of the Academy of Marketing Science*, Vol. 48 No. 4, pp. 649-669.

Boateng, G., Neilands, T., Frongillo, E., Melgar-Quiñonez, H. and Young, S. (2018), "Best practices for developing and validating scales for health, social, and behavioral research: a primer", *Frontiers in Public Health*, Vol. 6, p. 149, doi: 10.3389/fpubh.2018.00149.

Boerwinkel, D. (2016), "Does culture matter in online retail?: a quantitative study based on the online shopping behaviour of generation Y in relation to the cultural influences of Germans and Swedes", Unpublished Masters' Thesis, available at: http://www.diva-portal.org/smash/get/diva2:1096952/FULLTEXT01.pdf

Boudkouss, H. and Djelassi, S. (2021), "Understanding in-store interactive technology use: a uses and gratifications theory (UGT) perspective", *International Journal of Retail and Distribution Management*, Vol. 49 No. 12, pp. 1621-1639.

Bradley, M.M., Codispoti, M., Sabatinelli, D. and Lang, P.J. (2001), "Emotion and motivation II: sex differences in picture processing", *Emotion (Washington, DC)*, Vol. 1 No. 3, pp. 300-319.

Brody, L.R. (1997), "Gender and emotion: beyond stereotypes", *Journal of Social Issues*, Vol. 53 No. 2, pp. 369-393.

Campbell, J. (2013), "Muy local: differentiating Hispanic and Caucasian shoppers of locally produced foods in US grocery", *Journal of Retailing and Consumer Services*, Vol. 20 No. 3, pp. 325-333, doi: 10.1016/j.jretconser.2013.01.009.

Chang, C., Yan, C. and Tseng, J. (2012), "Perceived convenience in an extended technology acceptance model: mobile technology and English learning for college students", *Australasian Journal of Educational Technology*, Vol. 28 No. 5, pp. 809-826, doi: 10.14742/ajet.818.

Chemingui, H. and lallouna, H. (2013), "Resistance, motivations, trust and intention to use mobile financial services", *International Journal of Bank Marketing*, Vol. 31 No. 7, pp. 574-592, doi: 10.1108/IJBM-12-2012-0124.

Cialdini, R. and Trost, M. (1998), "Social influence: social norms, conformity and compliance", in Gilbert, D., Fiske, S. and Lindzey, G. (Eds), *Handbook of Social Psychology*, 4th ed., McGraw-Hill, Boston, pp. 151-192.

Comrey, A. and Lee, H. (1992), *A First Course in Factor Analysis*, Lawrence Erlbaum Associates, Hillsdale, NJ.

Dannenberg, P., Fuchs, M., Riedler, T. and Wiedemann, C. (2020), "Digital transition by COVID-19 pandemic? The German food online retail", *Tijdschrift voor economische en sociale geografie*, Vol. 111 No. 3, pp. 543-560, doi: 10.1111/tesg.12453.

Davis, F. (1985), *A Technology Acceptance Model for Empirically Testing New End-User Information Systems: Theory and Results*, Massachusetts Institute of Technology, Cambridge, MA.

Davis, F. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS Quarterly*, Vol. 13 No. 3, pp. 319-340, doi: 10.2307/249008.

Davis, F., Bagozzi, R. and Warshaw, P. (1989), "User acceptance of computer technology: a comparison of two theoretical models", *Management Science*, Vol. 35 No. 8, pp. 982-1003.

Demirkan, H. and Spohrer, J. (2014), "Developing a framework to improve virtual shopping in digital malls with intelligent self-service systems", *Journal of Retailing and Consumer Services*, Vol. 21 No. 5, pp. 860-868, doi: 10.1016/j.jretconser.2014.02.012.

Devderea, C. and Toader, F. (2018), "Consumer behavior towards apparel e-commerce in Romania", *Management Dynamics in the Knowledge Economy*, Vol. 6 No. 3, pp. 471-487, doi: 10.25019/MDKE/6.3.07.

Ding, J., Lannes, B. and Zhu, L. (2018), *Embracing China's "New Retail"*, Bain & Company et aliResearch, Boston, MA, available at: http://www.bain.com.cn/pdfs/201803131142079237.pdf

Djelassi, S., Godefroit-Winkel, D. and Diallo, M. (2018), "Does culture affect the relationships among utilitarian and non-utilitarian values, satisfaction and loyalty to shopping centres? Evidence IJRDM 49,12 1614 from two Maghreb countries", *International Journal of Retail and Distribution Management*, Vol. 46 Nos 11/12, pp. 1153-1169, doi: 10.1108/IJRDM-06-2017-0131.

Driediger, F. and Bhatiasevi, V. (2019), "Online grocery shopping in Thailand: consumer acceptance and usage behavior", *Journal of Retailing and Consumer Services*, Vol. 48 Complete, pp. 224-237, doi: 10.1016/j.jretconser.2019.02.005.

Faiers, J. (2021), "'If we want things to stay as they are, things will have to change.' Covid, couture and the 1%", *Luxury*, Vol. 6 No. 3, pp. 247-257, doi: 10.1080/20511817.2021.1897266.

Forza, C. and Filippini, R. (1998), "TQM impact on quality conformance and customer satisfaction: a causal model", *International Journal of Production Economics*, Vol. 55 No. 1, pp. 1-20.

Gielens, K., Ma, Y., Namin, A., Sethuraman, R., Smith, R., Bachtel, R. and Jervis, S. (2021), "The future of private labels: towards a smart private label strategy", *Journal of Retailing*, Vol. 97 No. 1, pp. 99-115.

Giovanis, A., Assimakopoulos, C. and Sarmaniotis, C. (2019), "Adoption of mobile self-service retail banking technologies: the role of technology, social, channel and personal factors", *International*

Journal of Retail and Distribution Management, Vol. 47 No. 9, pp. 894-914, doi: 10.1108/IJRDM-05-2018-0089.

Giraud, G., Amblard, C., Thiel, E., Zaouche-Laniau, M., Stojanović, Ž., Pohar, J., Butigan, R., Cvetković, M., Mugosa, B., Kendrovski, V., Mora, C. and Barjolle, D. (2013), "A cross-cultural segmentation of western Balkan consumers: focus on preferences toward traditional fresh cow cheese", *Journal of the Science of Food and Agriculture*, Vol. 93 No. 14, pp. 3464-3472, doi: 10.1002/jsfa.6350.

Gong, J., Smith, M. and Telang, R. (2015), "Substitution or promotion? The impact of price discounts on cross-channel sales of digital movies", *Journal of Retailing*, Vol. 91 No. 2, pp. 343-357, doi: 10.1016/j.jretai.2015.02.002.

Grewal, D., Noble, S., Roggeven, A. and Nordfalt, J. (2020), "The future of in-store technology", *Journal of the Academy of Marketing Science*, Vol. 48 No. 1, pp. 96-113.

Grewal, D., Gauri, D., Roggeveen, A. and Sethuraman, R. (2021), "Strategizing retailing in the new technology era", *Journal of Retailing*, Vol. 97 No. 1, pp. 6-12.

Guadagnoli, E. and Velicer, W. (1988), "Relation of sample size to the stability of component patterns", *Psychological Bulletin*, Vol. 103 No. 2, pp. 265-275.

Hair, J., Black, W., Babin, B., Anderson, R. and Tatham, R. (2010), *Multivariate Data Analysis*, Prentice-Hall, Upper Saddle River, NJ.

Halzack, S. (2015), "The staggering challenges of the online grocery business. Online", *The Washington Post*, available at: https://www.washingtonpost.com/news/the-switch/wp/2015/01/20/thestaggering-challenge

Hayes, A. (2013), *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*, Guilford, New York.

Henseler, J., Ringle, C.M. and Sarstedt, M. (2015), "A new criterion for assessing discriminant validity in variance-based structural equation modeling", *Journal of the Academy of Marketing Science*, Vol. 43 No. 1, pp. 115-135, doi: 10.1007/s11747-014-0403-8.

Hinkin, T. (1995), "A review of scale development practices in the study of organizations", *Journal of Management*, Vol. 21 No. 5, pp. 967-988.

Hong, J., Park, H. Chung, S., Chung, L., Cha, S., Lê, S. and Kim, K. (2014), "Effect of familiarity on a cross-cultural acceptance of a sweet ethnic food: a case study with Korean traditional cookie (Yackwa)", *Journal of Sensory Studies*, Vol. 29 No. 2, pp. 110-125, doi: 10.1111/joss.12087.

Hu, L. and Bentler, P. (1999), "Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives", *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 6 No. 1, pp. 1-55.

Hubner, A.H., Kuhn, H., Wollenburg, J., Towers, N. and Kotzab, H. (2016), "Last mile fulfilment and distribution in omni-channel grocery retailing: a strategic planning framework", *International Journal of Retail and Distribution Management*, Vol. 44 No. 3, pp. 228-247.

Hultén, B. (2012), "Sensory cues and shoppers' touching behaviour: the case of IKEA", *International Journal of Retail and Distribution Management*, Vol. 40 No. 4, pp. 273-289.

Hunt, S. (1991), *Modern Marketing Theory: Critical Issues in the Philosophy of Marketing Science*, South-Western Pub, Cinncinnati, OH.

Hyllegard, K., Eckman, M., Descals, A. and Borja, M. (2005), "Spanish consumers' perceptions of US apparel speciality retailers' products and services", *Journal of Consumer Behaviour: An International Research Review*, Vol. 4 No. 5, pp. 345-362.

Hyllegard, K., Yan, R., Ogle, J. and Attmann, J. (2010), "The influence of gender, social cause, charitable support, and message appeal on Gen Y's responses to cause-related marketing", *Journal of Marketing Management*, Vol. 27 No. 1-2, pp. 100-123.

Janssens, W., De Pelsmacker, P., Wijnen, K. and Van Kenhove, P. (2008), *Marketing Research with SPSS*, Pearson Education, New York.

Jiang, L., Yang, Z. and Jun, M. (2013), "Measuring consumer perceptions of online shopping convenience", *Journal of Service Management*, Vol. 24 No. 2, pp. 191-214, doi: 10.1108/09564231311323962.

Jöreskog, K. and Sörbom, D. (1989), *LISREL 7: A Guide to the Program and Applications*, SPSS, Chicago, IL.

Jöreskog, K. and Sörbom, D. (1993), *LISREL 8: Structural Equation Modeling with the SIMPLIS Command Language*, Scientific Software International. Lincolnwood, IL.

Kaynak, E. and Cavusgil, S.T. (1982), "The evolution of food retailing systems: contrasting the experience of developed and developing countries", *Journal of the Academy of Marketing Science (Pre-1986)*, Vol. 10.3, p. 249, ProQuest. Web. 20 May 2022.

Kline, P. (1993), *The Handbook of Psychological Testing*, Routledge, London.

Kronsik, J. and Presser, S. (2009), "Question and questionnaire design", in Marsden, P.V. and Wright, J.D. (Eds), *Handbook of Survey Research*, 2nd ed., Elsevier, San Diego, CA, pp. 263-314.

Lan, X., Xiao, H. and Chen, Y. (2019), "Life review for Chinese older adults in nursing homes: cultural acceptance and its effects", *International Psychogeriatrics*, Vol. 31 No. 4, pp. 527-535, doi: 10.1017/S1041610218001084.

Levine, L. (2019), "Digital trust and cooperation with an integrative digital social contract", *Journal of Business Ethics*, Vol. 160 No. 2, pp. 393-407, doi: 10.1007/s10551-019-04201-z.

Liao, S., Shen, Y. and Chu, C. (2009), "The effects of sales promotion strategy, product appeal and consumer traits on reminder impulse buying behaviour", *International Journal of Consumer Studies*, Vol. 33 No. 3, pp. 274-284, doi: 10.1111/j.1470-6431.2009.00770.x.

Ma, W., Wildman, S., Greenberg, B. and Peer, L. (2012), "Getting ready for digital broadcasting: factors contributing to consumer readiness", *International Journal of Digital Television*, Vol. 3 No. 1, pp. 23-38, doi: 10.1386/jdtv.3.1.23_1.

Morgado, F., Meireles, J., Neves, C., Amaral, A. and Ferreira, M. (2017), "Scale development: ten main limitations and recommendations to improve future research practices", *Psicologia: Reflexão e Crítica*, Vol. 30 No. 3, pp. 1-20.

Morin, A., Arens, A. and Marsh, H. (2016), "A bifactor exploratory structural equation modeling framework for the identification of distinct sources of construct-relevant psychometric multidimensionality", *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 23 No. 1, pp. 116-139.

Narayanareddy, M., Prasannakumar, M. and Srinivasareddy, B. (2016), "E-retailing: strategies, growth and problems", available at: http://ijetsr.com/images/short_pdf/1472991853_narayanreddy_ijetsr.pdf

Nathan, G. (2019), "Seizing the moment: insurtech is letting women leaders break out and show their innovative ideas to the changing sector", *Digital Insurance*, Vol. 22 No. 2, p. 4.

Nicholls, J. (1997), "Time and companionship: key factors in Hispanic shopping behavior", *Journal of Consumer Marketing*, Vol. 14, pp. 194-205.

Omarova, L.B., Muzashvili, D.Z., Prokhorova, I.G., Savchenko, N.V. and Suchilina, A.A. (2021), "Sociocultural peculiarities of gender aspect in Russian education and science", *SHS Web of Conferences*, Vol. 125, 02007, doi: 10.1051/shsconf/202112502007.

O'Neill, C., Cruz-Romero, M., Duffy, G. and Kerry, J. (2019), "Comparative study on the acceptability and consumer appeal of commercial products and research-optimised low-salt frankfurters and cooked ham manufactured using high-pressure processing and organic acids", *European Food Research and Technology*, Vol. 245 No. 4, pp. 793-804, doi: 10.1007/s00217-018-3213-2.

Pantano, E. and Dennis, C. (2019), *Smart Retailing Technologies and Strategies*, 1st ed., Springer International Publishing, Cham.

Parasuraman, A. (2000), "Technology readiness index (Tri): a multiple- item scale to measure readiness to embrace new technologies", *Journal of Service Research*, Vol. 2 No. 4, pp. 307-320, doi: 10.1177/109467050024001.

Parasuraman, A. and Colby, C. (2015), "An updated and streamlined technology readiness index: TRI 2.0", *Journal of Service Research*, Vol. 18 No. 1, pp. 59-74, doi: 10.1177/1094670514539730.

Parise, S., Guinan, P. and Kafka, R. (2016), "Solving the crisis of immediacy: how digital technology can transform the customer experience", *Business Horizons*, Vol. 59 No. 4, pp. 411-420, doi: 10.1016/j.bushor.2016.03.004.

Pham, Q., Tran, X., Misra, S., Maskeliunas, R. and Damasevicius, R. (2018), "Relationship between convenience, perceived value, and repurchase intention in online shopping in Vietnam", *Sustainability*, Vol. 10 No. 1, pp. 156-170, doi: 10.3390/su10010156.

Powell, C. (2020), "COVID-19 will lead to lasting changes in consumer behaviour: Accenture", *Canadian Grocer*, available at: https://canadiangrocer.com/covid-19-will-lead-lasting-changes-consumer-behaviour-accenture

Ring, L. and Tigert, D. (2001), "The decline and fall of internet grocery retailers", *International Journal of Retail and Distribution Management*, Vol. 29 No. 6, pp. 264-271.

Schinka, J. and Velicer, W. (2012), *Handbook of Psychology: Research Methods*, Vol. 2, Wiley, Hoboken, NJ.

Schwartz, S. (1994), "Are there universal aspects in the structure and contents of human values?", *Journal of Social Issues*, Vol. 50 No. 4, pp. 19-45.

Seiders, K., Berry, L. and Gresham, L. (2000), "Attention, retailers! How convenient is your convenience strategy?", *Sloan Management Review*, Vol. 41 No. 3, pp. 79-89, available at: https://sloanreview.mit.edu/article/attention-retailers-how-convenient-is-your-convenience-strategy/

Shankar, V., Kalyanam, K., Setia, P., Golmohammadi, A., Tirunillai, S., Douglass, T., Hennessey, J., Bull, J. and Waddoups, R. (2021), "How technology is changing retail", *Journal of Retailing*, Vol. 97 No. 1, pp. 13-27.

Shaw, N. (2014), "The mediating influence of trust in the adoption of the mobile wallet", *Journal of Retailing and Consumer Services*, Vol. 21 No. 4, pp. 449-459, doi: 10.1016/j.jretconser.2014.03.008.

Shirai, M. (2015), "Impact of 'high quality, low price' appeal on consumer evaluations", *Journal of Promotion Management*, Vol. 21 No. 6, pp. 776-797, doi: 10.1080/10496491.2015.1088922.

Sorokin, P. (1937), *Social and Cultural Dynamics*, Vol. 3, American Book Company, New York.

Stanovich, K. and West, R. (2000), "Individual differences in reasoning: implications for the rationality debate?", *Behavioral and Brain Sciences*, Vol. 23 No. 5, pp. 645-665.

Sundararajan, A. (2019), "Commentary: the twilight of brand and consumerism? Digital trust, cultural meaning, and the quest for connection in the sharing economy", *Journal of Marketing*, Vol. 83 No. 5, pp. 32-35, doi: 10.1177/0022242919868965.

Tarik, Z. and Adnan, S. (2018), "Online vs traditional; marketing challenge in the telecom market in Bosnia and Herzegovina", *Economic Review: Journal of Economics and Business*, Vol. 16 No. 1, pp. 45-57.

Thomas-Francois, K. and Somogyi, S. (2021), "Affective adoption of new grocery shopping modes through cultural change acceptance, consumer learning, and other means of persuasion", *International Journal of Electronic Marketing and Retailing*, Vol. 12 No. 4, pp. 323-338, doi: 10.1504/IJEMR.2021.10036679.

Thomas-Francois, K. and Somogyi, S. (2022), "Consumers' intention to adopt virtual grocery shopping: do technological readiness and the optimisation of consumer learning matter?", *International Journal of Retail and Distribution Management*, Vol. 50 No. 5, pp. 638-657, doi: 10.1108/IJRDM-06-2020-0206.

Venkatesh, V. and Davis, F. (2000), "A theoretical extension of the technology acceptance model: four longitudinal field studies", *Management Science*, Vol. 46 No. 2, pp. 186-204.

Verbeke, W., Scholderer, J. and Lähteenmäki, L. (2009), "Consumer appeal of nutrition and health claims in three existing product concepts", *Appetite*, Vol. 52 No. 3, pp. 684-692, doi: 10.1016/j.appet.2009.03.007.

Verhoef, P.C., Kannan, P.K. and Inman, J. (2015), "From multi-channel retailing to omni-channel retailing: introduction to the special issue on multi-channel retailing", *Journal of Retailing*, Vol. 91 No. 2, pp. 174-181.

Verweij, M. and Senior, T.J. (2015), "Social theory and the cognitive-emotional brain", *Behavioral and Brain Sciences*, Vol. 38, p. e88, doi: 10.1017/S0140525X14001034.

Wallstreet Online (2020), "Corona fear is causing a boom in online grocery retail", *Wallstreet Online*, available at: https://www.wallstreet-online.de/nachricht/12336847-virus-corona-angst-sracht-boom-online-lebensmittelhandel

Wang, O. and Somogyi, S. (2018), "Consumer adoption of online food shopping in China", *British Food Journal*, Vol. 120 No. 12, pp. 2868-2884, doi: 10.1108/BFJ-03-2018-0139.

Wang, O. and Somogyi, S. (2019), "Determinants for consumer food choice with the new retail e-commerce mode", IDEAS Working Paper Series from RePEc, available at: https://econpapers.repec.org/RePEc:ags:aare19:285035

Weber, M. (Ed.), (1942), *The Theory of Social and Economic Organisation*, Collier Macmillan, London.

Weber, M. (2003), "The Definitions of sociology and of social action", in Bailey, G. and Gayle, N. (Eds), *Social Theory: Essential Readings*, Oxford University Press, Toronto, pp. 204-237.

White, G. and Manning, B. (1998), "Commerical WWW site appeal: how does it affect online food and drink consumers' purchasing behavior?", *British Food Journal*, Vol. 100 No. 9, pp. 413-418.

Wohlfeil, M., Patterson, A. and Gould, S. (2019), "The allure of celebrities: unpacking their polysemic consumer appeal", *European Journal of Marketing*, Vol. 53 No. 10, pp. 2025-2053, doi: 10.1108/EJM-01-2017-0052.

Zhang, Y., Weng, Q. and Zhu, N. (2018), "The relationships between electronic banking adoption and its antecedents: a meta-analytic study of the role of national culture", *International Journal of Information Management*, Vol. 40 No. 1, pp. 76-87.

Further reading

Formell, C. and Larcker, D. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Structural Equation Modeling*, Vol. 3, pp. 62-72.

Appendix

	(1, SD – 7, SA) Standardised CFA loadings
Cultural acceptance of digital technology	
I expect in these times technology usage in society has increased, so I embrace this change as well.[a]	–
I think it is acceptable in society to introduce more technology to make life easier	0.843
I think society members consciously use digital technology in life activities in a beneficial way	0.870
It is now the norm that members of society will perform daily transactions using digital technology	0.784
Consumer affection-appeal	
After evaluating my options, I am drawn to shopping for groceries using digital technology	0.943
Due to my needs, I am drawn to shop for groceries digitally	0.887
I really like the empowerment I feel when shopping for groceries using digital means[a]	–
I love to shop for groceries using digital technology	0.932
I feel excited when I have the option to shop for groceries using digital technology[a]	–
I am fond of purchasing groceries using digital options	0.958
I am delighted to shop for groceries using digital technology	0.946
Digital trust	
I am certain of protection when using digital technology for grocery shopping	0.794
I believe that digital spaces are reliable when shopping for groceries	0.882
I believe that digital technology for grocery shopping has established norms and procedures to make my transactions secure	0.892
I believe that should a problem occur with my digital grocery shopping transactions, the grocery store will not exploit me	0.795
I believe that the digital technologies used for the grocery store's transactions have integrity	0.850
Digital convenience	
It is easy to access groceries I wish to purchase using digital methods	0.832
It is easy to find the products I am looking for at a grocery store's website	0.881
It is easy to find the products I am looking for using the grocery store's digital browsing tools	0.925
I can easily locate the product I am looking for when I use digital browsing tools in grocery stores	0.915
Consumer digital readiness	
I have all I need to be able to participate in the digital way of doing personal business.[a]	–
I am mentally ready to use digital technology in much of what I do in life	0.870
I am always ready to use the latest technology that is available to me	0.872
I am ready to use advanced technology that benefits the quality of my life	0.901
I am prepared to make all necessary changes to participate in the digital way of doing personal business	0.887
Intention to adopt	
I plan to adopt online/self-service technologies for my grocery shopping	0.939

(*continued*)

Table A1. Measurement items and results of confirmatory factor analysis

	(1, SD – 7, SA) Standardised CFA loadings
I will most likely adopt online/self-service technologies for my grocery shopping	0.967
I think it's better for me to adopt online/self-service technologies for my grocery shopping	0.945
Over time I will use online/self-service technology for my grocery shopping	0.898
Adopted from: Chemingui and lallouna (2013)	
Consumer learning	*(1, Never – 7, Always)*
I find out about new shopping trends by searching online.[a]	–
I find out about new shopping trends from Social Media.[a]	–
I find out about new shopping trends by reading newspapers and magazines.[a]	–
I find out about new shopping trends from suggestions and recommendations of my friends and family	0.922
I find out about new shopping trends from observing my friends and family	0.885
Adopted from: Shaw (2014)	

Table A1. **Note(s):** Eliminated during scale refining for CFA Cultural Acceptance Model[a]

About the authors

Dr Kimberly Thomas-Francois is a PhD in Management graduate of the University of Guelph specialised in Service Management. Her research programme includes a service-oriented approach to linking the agriculture and tourism sectors, consumer engagement, service leadership, value and supply chain development. She successfully completed Post-doctoral research work in smart and virtual and digital food retailing. Currently she is a member of the Faculty of Adventure, Culinary Arts and Tourism at Thompson Rivers University. Kimberly Thomas-Francois is the corresponding author and can be contacted at: kthomasfrancois@tru.ca

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