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Beyond handy: continued intention towards using same-day delivery shopping apps

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Abstract

Purpose – The use of same-day delivery service grocery shopping apps has the potential to greatly impact the patronage and subsequent profitability of grocery retailers. Aided by the stimulus-organism-response (SOR) framework, this study investigates possible drivers of continued intention to use these shopping apps amongst customers.

Design/methodology/approach – Through purposive sampling, self-administered paper-based questionnaires were distributed to respondents. A total of 462 useable responses were collected and analysed utilising Mplus version 7.4.

Findings – This study highlights the importance of enjoyment and price value, in addition to ease of use and usefulness, in driving consumers' continued intention to use same-day delivery service grocery shopping apps. Conditional effects show a tempering effect as perceived innovativeness and facilitating conditions (individual factors) increase.

Research limitations/implications – The study is confined to customers of three popular same-day delivery service grocery shopping apps within South Africa.

Practical implications – Valuable insights are provided into how grocery retailers can secure continued intention through enjoyment and price value, going beyond ease of use and usefulness, to encourage customers to use their shopping apps.

Originality/value – The paper examines the drivers of continued intention to use same-day delivery service grocery shopping apps, applying the stimulus-organism-response framework, and considers the moderation effects of individual factors on the proposed relationships.

Keywords Grocery shopping apps, S-O-R framework, Ease of use, Usefulness, Enjoyment, Price value, Innovativeness, Facilitating conditions, Continued intention

Paper type Research article

Introduction

The online grocery shopping industry's market size exceeded US$939 billion in 2024, representing a significant increase from 2019's sales of US$155 billion (Statista, 2024). This growth highlights the accelerating shift of customers towards online shopping for groceries, and given the competition within this sector, grocery retailers must be innovative in their approach to satisfying customer needs (Schubert *et al.*, 2021). One approach is the introduction of same-day delivery services, where consumers can order and receive their groceries within a specific period (Köhler *et al.*, 2020), which has resulted in a shift in focus, as retailers have been accustomed to the "next-day delivery" being the norm (Schubert *et al.*, 2021).

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In South Africa, where the empirical study was conducted, there has been a significant annual growth of 11.81% in the usage of same-day delivery grocery shopping apps among consumers (Statista, 2024). Although the growth rate is significant, the user penetration rate is relatively low at 9.8% (Statista, 2024), indicating the market's potential for grocery retailers seeking to enter or expand their share of this market. Same-day grocery delivery shopping is still a relatively new concept, as consumers can purchase groceries online (usually via an app) and select a time slot that is convenient for delivery (McKinsey and Company, 2023). However, despite growing interest in grocery retailers offering same-day delivery, existing research on what drives consumers' continued intention to use same-day grocery delivery apps is limited. Instead, research focuses on logistical optimisation (i.e. Köhler *et al.*, 2020; Schubert *et al.*, 2021) or adoption of the technology (i.e. Wang *et al.*, 2021). While these studies have contributed insights into the operational efficiencies and early-stage user motivation, they have not focused on the post-adoption behaviour, such as what encourages continued use of the apps. This has limited the understanding of continued use, as the Technology Acceptance Model (TAM), which most studies have used, explains the importance of ease of use and usefulness in the design of the technology to ensure adoption (Ma and Liu, 2005), but does not focus on the post-adoption phase. Thus, this study focuses on the continued intention to use same-day grocery delivery apps from the consumers' perspective, providing a more nuanced understanding of what drives consumers' continued use of the technology. From a practical perspective, focusing on continued intention allows grocery retailers to understand how to encourage long-term usage and ultimately increase profitability by promoting continued use. For instance, this study highlights the importance of enjoyment and price value, in addition to ease of use and usefulness, in driving continued intention to use same-day delivery service grocery shopping apps.

Therefore, this study aims to determine the drivers of consumers' continued intention to use same-day delivery grocery shopping apps in South Africa by addressing these three questions:

(1) How do ease-of-use and usefulness (as stimuli) influence consumer perceptions of enjoyment and price value (as organisms) of the apps?

(2) To what extent do enjoyment and price value mediate the effects of ease-of-use and usefulness on consumers' continued intention to use the apps?

(3) Do individual factors (innovativeness and facilitating conditions) moderate the relationships between stimuli and organisms?

Theoretical framework

TAM and the stimulus-organism-response (SOR)

TAM proposes that individuals' acceptance of new technology is based on two cognitive beliefs: perceived usefulness and perceived ease of use (Davis, 1989). It serves as the conceptual foundation for this study, given its ability to forecast and predict individuals' tendencies to adopt various technologies within different contexts (Akdim *et al.*, 2022). The TAM recognises that external variables impact perceived usefulness and perceived ease of use, which subsequently influence attitude, behavioural intention, and technology use (Davis, 1989). Both perceived ease of use and usefulness significantly influence consumers' positive responses towards using mobile apps to complete tasks like searches, information sharing, and purchasing products (Davis, 1989). However, the TAM has been criticised for its predominant utilitarian orientation, which can underplay the role that hedonic motivations may have in explaining behaviour (Akdim *et al.*, 2022). For example, while ease of use is often more crucial during early adoption, as a consumer becomes more familiar with the technology, its role may diminish (Oghuma *et al.*, 2016), with other factors, such as enjoyment, becoming more influential, particularly for continued usage.

The S-O-R framework provides context to how external signals (e.g. stimuli) influence individuals (e.g. organism) and their responses positively or negatively. Stimuli are external environmental signals provoking emotional and cognitive states, while the organism represents human cognitive and affective states. Lastly, responses reflect individuals' behavioural choices, which can be approach or avoidance responses (Shah *et al.*, 2020). The framework posits that stimuli affect an organism, leading to behavioural responses, and is widely utilised in consumer behaviour research (Ligaraba *et al.*, 2023). Laato *et al.* (2020) argued that this is due to its ability to be context-specific, encompassing various factors that influence consumers' cognitive and affective processes, leading to behavioural responses. Furthermore, the inclusion of the organism as a mediator provides an increased explanation of consumers and their responses (Yan *et al.*, 2018). Although the S-O-R framework has been critiqued for being simplistic, particularly in its application to the organism, it is often oversimplified (Jacoby, 2002). This is avoided in this study by including dual operationalisation, which encompasses both hedonic and utilitarian states. Therefore, by integrating both the TAM constructs (ease of use and usefulness) as stimuli and positioning enjoyment and price value as the organism, the study extends the S-O-R into a continuance context.

Stimuli (ease of use and usefulness)

The surge in mobile grocery shopping applications, accelerated by global events, prompts researchers to explore stimuli that lead to positive responses (Rîndaşu *et al.*, 2022). Stimuli are external forces that affect individuals' psychological state and influence cognitive and emotional processes, ultimately leading to behavioural responses (Chang, 2022). Davis (1989) highlighted that perceived ease of use, along with perceived usefulness, is a fundamental determinant of user behaviour within the technological context. Perceived ease of use and usefulness are considered intrinsic motivations behind online shopping intention, and there is a clear interconnectedness between ease of use and usefulness (De Canio *et al.*, 2021; Singh, 2019).

In the context of mobile apps, consumers find apps easy to use when they are quick, easy, and user-friendly (Li *et al.*, 2020). However, research suggests that ease of use decreases in its importance once the consumer becomes experienced in using the technology, which shifts the focus to more hedonic drivers like enjoyment (Oghuma *et al.*, 2016).

Perceived usefulness is the extent to which individuals believe that a technology or system helps them perform tasks more efficiently or effectively (Davis, 1989). This concept plays a crucial role in mobile shopping, where it supports consumers in evaluating and choosing products (Saleem *et al.*, 2022). Humbani and Wiese (2019) added that perceived usefulness plays a significant role in the continued intention to use a mobile app due to a particular technology being used to assist individuals in achieving specific outcomes, with the predictive power of perceived usefulness often exceeding that of perceived ease of use in various digital technology contexts. Yet, studies have shown that the influence of usefulness may weaken over time, with consumers becoming more experienced with technology and other factors becoming more important (Oghuma *et al.*, 2016).

Organisms (enjoyment and price value)

The organism mediates between the stimuli and the positive or negative response. Within the S-O-R, the organism reflects the internal state of the consumer (Shah *et al.*, 2020), and when shopping online, consumers are affected by their hedonic and utilitarian motivations. Considering the organism in an online shopping context, the enjoyment and the price value that the individual derives are important considerations, reflecting both hedonic and utilitarian motivations (Yan *et al.*, 2018). Several studies have explored the impact of enjoyment on individuals' motivation to use technology (e.g. positive response), consistently finding that the more enjoyable the technology, the more likely the use (Hung *et al.*, 2021; Lang, 2018). The enjoyment in buying can be derived from the purchased product and the buying process

(Amarsela, 2018, p. 67). Moreover, online shopping alleviates stress or negative feelings, with consumers believing that online shopping can effectively relieve stress and increase positive effects (Nguyen *et al.*, 2019). Enjoyable shopping experiences contribute to a more favourable attitude towards online shopping, increasing the likelihood of a positive response (Patel and Asthana, 2015). From a pricing perspective, when shopping online, consumers perceive not only a time-saving benefit but also price savings (Kumar and Kashyap, 2018). Therefore, consumers perceive online shopping as offering value for money, as discounts or savings received are used to encourage continued use of the app (Sreeram *et al.*, 2017).

Response (continued intention)

Continued intention, within a technology context, is the extent to which an individual, currently engaged in such activities, consciously plans to continue using the technology in the future (Humbani and Wiese, 2019). The more favourable the effect of the stimuli, the greater the likelihood of the individual intending to continue using the technology. In the case of mobile apps, the habitual use of these applications fosters the intention to continue using them, given that individuals tend to engage in automatic behaviours (Tam *et al.*, 2020). Furthermore, while the initial adoption of technology is a crucial milestone, the sustained use, rather than the initial acceptance or adoption, determines the long-term sustainability and success of the technology (Wang *et al.*, 2021).

Conceptual model development

The interrelationship between two stimuli

Individuals have been found to respond to various stimuli (Doğan-Südaş *et al.*, 2023). Within a technological context, the two most important stimuli impacting a positive response are perceived ease of use and usefulness (Lu *et al.*, 2022). Numerous studies across various contexts, including e-commerce, mobile banking, mobile shopping, mobile wallet, and Internet banking, have established a direct relationship between ease of use and perceived usefulness (e.g. Bogea and Brito, 2018; Kang, 2014; Kim *et al.*, 2007; Winarno and Putra, 2020). This is based on the premise that technology perceived as easy to use is more accessible and, therefore, impacts the perception of its usefulness (Humbani and Wiese, 2019). If the perception of the ease with which customers use the mobile app is high, then the perceived usefulness will also increase (Winarno *et al.*, 2021).

H1. The ease of use significantly and positively influences the usefulness of the app.

The interrelationship between stimulus and organism

Within the mobile app context, stimuli that lead to enjoyment and price value (organisms) are consumers' perceived ease of use and usefulness of the mobile app (Ngubelanga and Duffett, 2021). Mobile apps are designed to provide consumers with an easy yet useful manner to obtain information or complete tasks (Chung *et al.*, 2022). When referring to ease of use within a mobile app context, this relates to the amount of effort that consumers expend, meaning that an easy-to-use app allows for increased efficiency, performance, and productivity (Bhattacharjee *et al.*, 2023). This differs from the usefulness of a mobile app, which focuses on the benefits that consumers derive from using the mobile app. This can be explained by consumers being able to compare pricing easily and shop for new products as well as easier and more convenient purchasing (Sarkar *et al.*, 2020). According to Vahdat *et al.* (2021), when a mobile app is easy to use and useful to their shopping process, consumers find the process of using a mobile app enjoyable and beneficial. This is particularly important within the grocery sector, where consumers perceive grocery purchases as a mundane task (Sarkar and Khare, 2019). Therefore, offering consumers an easy-to-use and useful mobile grocery app leads to consumers deriving both hedonic (e.g. enjoyment) and utilitarian benefits (e.g. saving) (Köse *et al.*, 2019).

H2. The ease of use significantly and positively influences the enjoyment of the apps.

H3. The ease of use significantly and positively influences the price value of the apps.

H4. The usefulness significantly and positively influences the enjoyment of the apps.

H5. The usefulness significantly and positively influences the price value of the apps.

The interrelationship between organism and response

The importance of perceived enjoyment should not be ignored, as consumers who do not experience joy in a process or product simply do not intend to return (Alalwan, 2020). When using a mobile app to purchase groceries, consumers who experience joy find the app to be entertaining and fun to use, which is necessary within the grocery sector, where purchases are generally utility-focused (Ligaraba *et al.*, 2023). The price value that consumers perceive in using a mobile app to make grocery purchases also leads to consumers returning to the same mobile app. Price value determines the trade-off that consumers make between the costs and benefits gained when using a mobile app (Nathan *et al.*, 2020). Within an online environment where consumers can easily compare and review prices from different mobile grocery apps, ensuring that consumers perceive greater benefits leads to consumers returning to a grocery retailer (Butt *et al.*, 2022). Thus, ensuring enjoyment and providing price value indicates that consumers will continue to purchase, as found in studies by Alalwan (2020) and McLean *et al.* (2018).

H6. Enjoyment significantly and positively influences the continued intention to use the apps.

H7. Price value significantly and positively influences the continued intention to use the apps.

Organism mediation between stimulus and response

As discussed, the organism is affected by the stimulus and impacts the response (Ligaraba *et al.*, 2023). This suggests that the organism is associated with an internal response or experience influenced by emotional and cognitive states (Jornales, 2023). According to van der Heijden (2004), the level of enjoyment that individuals have with technology impacts their experiences. Accordingly, individuals who find an app easy to use and useful are more likely to experience enjoyment (the emotional state), which would increase their continued intention to use it. Supported by Venkatesh and Bala (2008), who indicated that ease of use and usefulness can enhance shopping experiences. Furthermore, the ease of use of an app may be perceived as more enjoyable due to the reduction in non-monetary costs (i.e. effort) and monetary costs (i.e. cheaper products) associated with using the app (Venkatesh *et al.*, 2003) or because the app is perceived as useful due to the price value it offers (Kim *et al.*, 2007), which could strengthen the intention to continue using it.

H8a-b. Enjoyment mediates the relationships between ease of use, usefulness, and the continued intention to use same-day delivery service grocery shopping apps.

H9a-b. Price value mediates the relationships between ease of use, usefulness, and the continued intention to use same-day delivery service grocery shopping apps.

Individual factors as a moderator on the relationship between stimulus and organism

Innovativeness and facilitating conditions are individual factors, as innovativeness focuses on individuals' willingness to try new technology (Rogers, 2003), and facilitating conditions include both internal and environmental factors (Venkatesh *et al.*, 2003) experienced by

individuals. According to Lu *et al.* (2005), highly innovative individuals constantly seek new information or experiences and are comfortable with high levels of uncertainty, need to learn new skills, and are often willing to be the first to try technology. Yi *et al.* (2006) added that innovative individuals derive enjoyment from the technological features. Therefore, the more innovative individuals are, the more enjoyment and value they derive from using a mobile app. The facilitating conditions are "the degree to which an individual believes that an organisation and technical infrastructure exist to support the use of the system" (Venkatesh *et al.*, 2003). Within the context of this study, the different facilitating conditions could refer to access to resources and having the required knowledge to use same-day grocery delivery apps. When individuals feel the facilitating conditions are supportive, it enhances the ease of use and usefulness of the technology (Venkatesh *et al.*, 2003), leading to greater levels of enjoyment and perceived price value.

H10a-d. Innovativeness moderates the relationships between ease of use, usefulness, enjoyment, and price value of same-day delivery service grocery shopping apps.

H11a-d. Facilitating conditions moderate the relationships between ease of use, usefulness, enjoyment, and price value of same-day delivery service grocery shopping apps.

Figure 1 below provides the conceptual model for the study based on the aforementioned hypotheses.

Methodology

The study was quantitative in nature, and the research design was descriptive-explanatory. The approach to theory development was deductive. The target population included South African consumers who utilised one of three same-day delivery service grocery apps from three large South African grocery retailers and used one of the apps at least once a month and spent at least R150 per month (±€8.00), excluding the delivery fee on the app. Using purposive sampling and quota sampling based upon the app used most frequently by the prospective respondent, a field services company assisted in facilitating the data collection by distributing the self-administered online questionnaire to respondents and facilitating the data collection process. These sampling techniques are appropriate in the absence of a sample frame. Several remedies were implemented to mitigate the potential bias and limited generalisability associated with the study's sampling techniques. First, all fieldworkers were properly trained regarding the

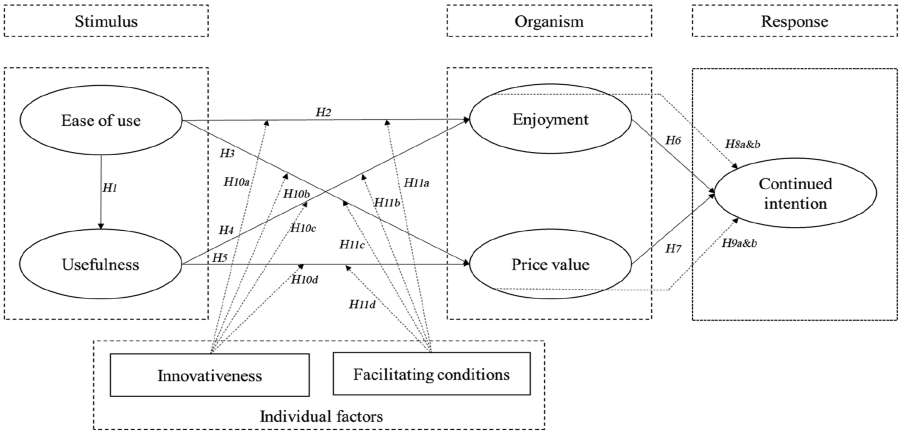

Figure 1. Conceptual model. Source: Authors' own work

study's target population and which prospective respondents qualified or did not. This vetting process was supported by several screening questions that filtered out respondents that were not part of the study's target population. Second, the field agency employed quality checks on the data collection efforts of all fieldworkers. Moreover, the researchers were involved throughout the process, monitoring the data collection and ensuring adherence to ethical considerations. The respondents were informed that their responses would be anonymous and confidential, accessible only to the researchers, and that they could withdraw from the study at any time. Since non-response bias is a concern in survey research, the questionnaire was designed to include clear and concise questions.

The self-administered questionnaire comprised a demographic section, a section measuring the app patronage habits of respondents, and a section measuring the study's constructs with items adapted from various studies: ease of use (McLean *et al.*, 2018), usefulness, innovativeness (Ha and Im, 2014), enjoyment (Hasni *et al.*, 2021), price value (Patharia *et al.*, 2021), continued intention (Wan *et al.*, 2020) and facilitating conditions (Upadhyay *et al.*, 2022). The items were adapted from the original studies to ensure the context of same-day delivery grocery shopping apps, as the original studies either focused on mobile or technology within different contexts – e.g. MOOCs, service adoption and tourism – and have been provided in Table 1. All constructs were measured on an unlabelled seven-point Likert-type scale, where 1 was "strongly disagree" and 7 indicated "strongly agree". A pilot study was conducted to determine whether the questionnaire was appropriate, and the results of the pilot study demonstrated that the measures used in the questionnaire were reliable and data could be collected. Ultimately, 462 useable responses were collected, representing an equal number of respondents using each of the three same-day delivery service grocery apps considered. Given the sampling techniques used in this study, the field services company continued to survey respondents to fill the quotas, ensuring that the targeted number of responses was reached. Finally, this study relied on a conventional 95% confidence interval for statistical significance of main, indirect and interaction effects (Hayes, 2018).

Demographic profile and same-day delivery service grocery shopping app patronage habits of respondents

The sample of 462 respondents comprised 178 (38.5%) respondents aged 26 years or younger, 143 (31.0%) aged 27–34 years, and 141 (30.5%) aged 35 years or older at the time of the study. Most respondents (64.1%) were female and full-time employed (39.2%) or full-time students (21%). Each of the same-day delivery service grocery shopping apps was used most frequently by approximately a third of the study's respondents. Respondents spent on average R1 513.87 (±€80.00) per online purchase with a minimum spend of R150 (±€8.00) and a maximum of R6 000 (±€315.00). Most respondents used the same-day delivery service grocery shopping app once a month (53.7%), followed by 27.3% using the app twice a month.

Findings

Assessment of normality of distribution

For all items that were used to measure the constructs of the study, the Kolmogorov–Smirnov and Shapiro–Wilk tests were significant, which is indicative of the non-normal distribution of the data. Conventional estimators such as maximum likelihood (ML) assume multivariate normality. However, when data do not exhibit multivariate normality, using ML might bias standard errors and model parameters, and inflate the chi-square statistic (qe, 2012). Subsequently, this study used the ML Mean-adjusted (MLM) estimator.

Assessment of the measurement model

Based on Table 1, convergent validity and reliability are evident, with the factor loadings, AVEs, Cronbach's alpha values, and CRs all exceeding the specified cut-off values. It is clear

Table 1. Measurement model convergent validity and reliability

Constructs and items	Standardised estimate	S.E. est	*t*-value	*p*-value	AVE	CA	CR
Ease of use (Mclean *et al.*, 2018)					*0.824*	*0.965*	*0.966*
Learning to use this same-day delivery grocery shopping app is easy for me	0.883	0.014	62.11	0.0001**			
I find it easy to get this same-day delivery grocery shopping app to do what I want it to do	0.904	0.01	88.499	0.0001**			
My interaction with this same-day delivery grocery shopping app is clear and understandable	0.907	0.012	78.027	0.0001**			
I find this same-day delivery grocery shopping app to be flexible to interact with	0.918	0.011	86.849	0.0001**			
It is easy for me to become skilful at using this same-day delivery grocery shopping app	0.924	0.009	106.653	0.0001**			
I find this same-day delivery grocery shopping app easy to use	0.91	0.013	72.756	0.0001**			
Usefulness (Ha and Im, 2014)					*0.831*	*0.936*	*0.936*
This same-day delivery grocery shopping app improves my shopping productivity	0.897	0.013	70.863	0.0001**			
This same-day delivery grocery shopping app enhances my effectiveness in shopping	0.949	0.01	99.454	0.0001**			
This same-day delivery grocery shopping app improves my shopping ability	0.887	0.013	69.709	0.0001**			
Enjoyment (Hasni *et al.*, 2021)					*0.829*	*0.934*	*0.935*
I find this same-day delivery grocery shopping app enjoyable for shopping	0.901	0.013	69.602	0.0001**			
It is pleasant to use this same-day delivery grocery shopping app for shopping	0.938	0.01	92.439	0.0001**			
It is fun to use this same-day delivery grocery shopping app for shopping	0.891	0.017	51.191	0.0001**			
Price value (Patharia *et al.*, 2021)					*0.724*	*0.887*	*0.887*
The groceries available on this same-day delivery grocery shopping app are reasonably priced	0.781	0.026	30.619	0.0001**			
This same-day delivery grocery shopping app offers a variety of groceries	0.917	0.015	60.602	0.0001**			
This same-day delivery grocery shopping app provides groceries that are good value for money	0.85	0.018	46.288	0.0001**			
Continued intention (Wan *et al.*, 2020)					*0.834*	*0.951*	*0.953*
I intend to continue using this same-day delivery grocery shopping app for my shopping needs	0.914	0.012	74.567	0.0001**			

(*continued*)

Table 1. Continued

Constructs and items	Standardised estimate	S.E. est	*t*-value	*p*-value	AVE	CA	CR
I intend to continue using this same-day delivery grocery shopping app to enrich my shopping experience	0.94	0.01	98.49	0.0001**			
I will continue using this the same-day delivery grocery shopping app increasingly in the future	0.913	0.012	79.275	0.0001**			
I will recommend other people to use this same-day delivery grocery shopping app	0.886	0.015	60.959	0.0001**			
Innovativeness (Ha and Im, 2014)					*0.860*	*0.948*	*0.949*
If I heard about new information technology, I would look for ways to experiment with it	0.901	0.011	81.595	0.0001**			
Among my friends, I am usually the first to try out new information technologies	0.95	0.011	86.898	0.0001**			
I like to experiment with new information technologies	0.931	0.009	102.939	0.0001**			
Facilitating conditions (Upadhyay *et al.*, 2022)					*0.752*	*0.923*	*0.924*
I have the resources necessary to use this same-day delivery grocery shopping app to shop for groceries	0.851	0.021	40.961	0.0001**			
I have the knowledge necessary to use this same-day delivery grocery shopping app to shop for groceries	0.891	0.014	62.122	0.0001**			
I can get help from others when I have difficulties using this same-day delivery grocery shopping app to shop for groceries	0.881	0.016	54.126	0.0001**			
Specialised instructions concerning the use of this same-day delivery grocery shopping app to shop for groceries are available to me	0.845	0.023	36.205	0.0001**			

Note(s): **Statistically significant at *p*-value <0.01, two-tailed
Source(s): Authors' own work

from Table 2 that discriminant validity is present, since the specified condition had also been satisfied. With the assessment of the model fit of the measurement model, it was found that the measurement model is a reasonably good fit with the data (Satorra-Bentler χ^2/df ratio is 1.77, RMSEA is 0.041, CFI is 0.978, TLI is 0.974, and SRMR is 0.024), all falling within the recommended cut-off values.

Assessment of the structural model

With the assessment of the model fit of the structural model, it was found that the structural model measurement model was a reasonably good fit with the data (Satorra-Bentler χ^2/df ratio is 1.92, RMSEA is 0.045, CFI is 0.981, TLI is 0.977 and SRMR is 0.038), all falling within the recommended cut-off values. Inspecting the structural paths (Table 3), it can be seen ease of

Table 2. Discriminant validity for the measurement model

Constructs	EASE	USE	JOY	PVAL	CINT	INNO	FC
EASE	*0.908*						
USE	0.759	*0.911*					
JOY	0.811	0.774	*0.910*				
PVAL	0.657	0.606	0.673	*0.851*			
CINT	0.762	0.66	0.739	0.694	*0.913*		
INNO	0.473	0.582	0.426	0.447	0.37	*0.928*	
FC	0.748	0.663	0.754	0.733	0.821	0.376	*0.867*

Note(s): Square root of the AVE on the diagonal

Source(s): Authors' own work

Table 3. Structural model standardised estimates

Path			Standardised estimate	S.E. est	*p*-value	*t*-value	Result
Ease of use	→	Usefulness	0.759	0.036	0.0001**	21.070	Significant
Ease of use	→	Enjoyment	0.543	0.072	0.0001**	7.537	Significant
Ease of use	→	Price value	0.483	0.065	0.0001**	7.439	Significant
Usefulness	→	Enjoyment	0.368	0.075	0.0001**	4.894	Significant
Usefulness	→	Price value	0.248	0.068	0.0001**	3.632	Significant
Enjoyment	→	Continued intention	0.516	0.051	0.0001**	10.029	Significant
Price value	→	Continued intention	0.373	0.053	0.0001**	7.066	Significant

Note(s): **Statistically significant at *p*-value <0.01, two-tailed

Source(s): Authors' own work

use is a strong driver of usefulness, enjoyment, and price value. In addition, usefulness drove the enjoyment and perceived price value. Regarding continued intention, enjoyment was a stronger driver of continued intention than perceived price value. Based upon the findings, H1 to H7 can be supported.

Mediation analysis

For all four proposed mediation effects, a zero is not present among the lower-level (LLCIs) and upper-level confidence intervals (ULCIs), and therefore mediation is apparent. Given the guidelines of Zhao *et al.* (2010), complementary mediation was present in all four instances. Subsequently, H8a, H8b, H9a, and H9b can be supported.

Moderation analysis. Facilitating conditions significantly moderated the relationship between usefulness and enjoyment ($p = 0.0001$); however, the conditional effects of usefulness on enjoyment become weaker as levels of facilitating conditions increase. Hypothesis 11b is therefore supported. In addition, innovativeness was found to moderate the relationship between ease of use and enjoyment ($p = 0.089$), and facilitating conditions moderated the relationship between usefulness and price value ($p = 0.053$). While the conditional effects provide tentative evidence of the tempering effects of innovativeness and facilitating conditions, hypotheses H10a and H11d are not supported owing to the 95% confidence level adopted for this study. In addition, innovativeness did not moderate the relationships between usefulness and enjoyment ($p = 0.341$), ease of use and price value ($p = 0.156$), and usefulness and price value ($p = 0.795$). Hypotheses H10b, H10c and H10d are therefore not supported. Finally, facilitating conditions did not significantly moderate the

relationships between ease of use and enjoyment ($p = 0.411$) and price value ($p = 0.280$), respectively. H11a and H11c were therefore not supported.

Discussion

The study confirms the strong influence of ease of use on usefulness. This finding reaffirms the central belief of the TAM, which outlines that technology that is easy to use is also perceived as useful (Davis, 1989). Within a mobile app context, the easier an app is to use in terms of searching abilities and navigation, the more useful it appears to consumers, as they are not faced with operational or design challenges (Yan *et al.*, 2018). In addition, the finding highlights that in South Africa, where levels of digital literacy differ (South African Broadband Education Networks, 2025), the ease of use associated with an app is important, as consumers who may be less accustomed to mobile commerce would appreciate an app that is intuitive, clear, and straightforward. The importance of ease of use and usefulness on the enjoyment and price value was found, indicating that customers derive enjoyment from using the same-day delivery service grocery shopping apps. This offers a deeper understanding of the influence of both hedonic and utilitarian value as opposed to the traditional view of utilitarian values influencing behavioural intention within TAM (Davis, 1989), suggesting that emotional aspects such as enjoyment also play an important role in consumers' perceptions. In addition, the study shows that, compared to price value, enjoyment is a stronger driver of continued intention to use these apps. Although previous research (e.g. Sreeram *et al.*, 2017) suggests that cost savings dominate behavioural intention, this research shows the important role that hedonic value, specifically in enjoyment, plays. Whilst the utilitarian value of shopping online has been well established (i.e. Akdim *et al.*, 2022; Flacandji and Vlad, 2022), there is a gap in focusing on grocery shopping apps. Singh (2019) confirmed that although grocery shopping can be perceived as being a chore, the level of enjoyment still plays a significant role in customers' experiences, suggesting that grocery shopping apps have the potential to offer enjoyment to customers and should not only be perceived for their utilitarian purposes. Within the South African context, where most of the population is considered as youth, enjoyment is an important consideration for this target audience.

Regarding the mediation, the study shows that enjoyment and price value partially mediate the relationship between ease of use and usefulness and continued intention to use same-day grocery shopping apps. This extends the application of TAM by demonstrating that perceived ease of use and utility not only directly influence behavioural intention but also do so indirectly through affective (enjoyment) and evaluative (price value) organism contexts. Furthermore, this underpins the S-O-R, showing that external stimuli shape internal states. This suggests that same-day grocery shopping app users find apps easy to use and useful, which results in more enjoyable experiences, influencing their intentions to continue using the apps. The findings are supported by De Canio *et al.* (2021), who found that the more enjoyment customers experienced, the more engaged they were in the shopping process. This signifies the importance of enjoyment within grocery shopping, which has been regarded as a chore, especially in South Africa (Katrodia *et al.*, 2021). In terms of price value, the findings indicate that when consumers find the app easy to use and useful, it enhances their perceptions of price value and influences their continued intention to use the app. This suggests that the app is easy to use, and it may make consumers feel as though they are getting value for their money – a key driver in adopting mobile apps (Gupta and Arora, 2017). Within a South African context, this is vital as consumers make every effort to obtain value for money and will often switch to a competitor online where the switching costs are lower compared to offline shopping (Moodley and Buthelezi, 2023).

Focusing on individual factors that were considered moderators, the study provides tentative evidence that the conditional effect of ease of use on enjoyment becomes weaker as levels of innovation increase. This is anticipated, as highly innovative individuals are quick to

realise the benefits of mobile apps (Aboelmaged *et al.*, 2022) and may become accustomed to the apps early on, showing that individuals can accentuate the strength of the app design features. Additionally, highly innovative consumers may derive enjoyment from the features an app provides in terms of novelty, rather than its ease of use. For these customers, enjoyment may stem from exploring unique app functionalities, rather than relying solely on ease of use. Lastly, there is strong evidence that the conditional effect of usefulness on enjoyment becomes weaker as levels of facilitating conditions increase, and tentative evidence that the conditional effect of usefulness on price value becomes weaker as levels of facilitating conditions increase. This finding demonstrates that by improving access to facilitating conditions (i.e. resources, knowledge, instructions), the usefulness of an app becomes less critical in determining enjoyment. Suggesting that when consumers experience high levels of facilitating conditions, they may derive enjoyment from other factors such as speed, personalisation, and reliability, other than the usefulness of an app, and still perceive the app as providing good value for money and justify its use.

The originality of the study lies in the examination of the drivers of continued intention to use same-day delivery service grocery shopping apps, going beyond the TAM by applying the S-O-R framework, and it considers the moderation effects of individual factors on the proposed relationships between stimuli and organisms. This provides three contributions. Firstly, previous studies (e.g. Sreeram *et al.*, 2017) have focused more on the utilitarian drivers such as usefulness, price value and trust in predicting mobile app usage; however, this study extends the TAM by demonstrating that ease of use and usefulness not only influence continuance behaviour but also operate indirectly through hedonic (enjoyment) and evaluative (price value) states. Secondly, the study revealed that enjoyment is a stronger predictor of continued intention compared to price value. Previous studies have found the importance of enjoyment but predominantly focused on the initial adoption or use. For instance, Akdim *et al.* (2022) found that hedonic motivations enhanced the adoption of mobile commerce. Therefore, by applying the S-O-R framework to a continuance context, the study revealed how consumers' behaviour is shaped by the interplay between the stimuli and the organism, with enjoyment emerging as a more powerful driver of continuance compared to price value. This demonstrates that when understanding continual usage, as opposed to initial usage, the perceived hedonic value becomes important. Thirdly, the study demonstrated that ease of use and usefulness weaken when consumers are more innovative or have stronger facilitating conditions. The weakening of the TAM relationships under high levels of the individual factors (perceived innovativeness and facilitating conditions) suggests that the relationships are contingent on individual differences and the resources, knowledge and support they have. In technology adoption research, Humbani and Wiese (2019) found that innovativeness significantly influenced mobile payment adoption in South Africa, and Aboelmaged *et al.* (2022) found that facilitating conditions were critical to mobile commerce use within an emerging market context. However, this study demonstrated that within a continuance context, these factors potentially weaken the influence on perceived ease of use and usefulness, suggesting that once an individual is digitally proficient, other factors become more important. For highly innovative consumers, enjoyment is derived less from ease of use and more likely from novelty, interactivity, and the features of the same-day grocery delivery apps, while those with strong facilitating conditions derive value from time-saving, reliability, and convenience benefits. This demonstrates that while utilitarian drivers remain important predictors, enjoyment emerges as a more powerful driver of continued use. However, although the study is confined to customers of three popular same-day delivery service grocery shopping apps in South Africa, valuable insights are provided into how grocery retailers can secure continued intention through enjoyment and price value, going beyond ease of use and usefulness, to use the retailers' shopping apps.

Conclusion and implications

This study provides a more comprehensive picture of consumers' continued intention to use same-day delivery service grocery shopping apps by incorporating TAM constructs into the S-O-R framework. Given this framework, the organisms (enjoyment and price value) act as complementary mediators between the stimuli (ease of use and usefulness) and the response (continued intention). Thus, the study advances theory by showing that utilitarian drivers not only influence continuance but also operate through hedonic states – the stronger mediating role of enjoyment compared to price value challenges the traditional application of the TAM, which favours utilitarian drivers. The study also highlights the instances where individual factors (innovativeness and facilitating conditions) function as moderators between the stimuli and the organisms, weakening the role of ease of use and usefulness. This highlights continuance as a distinct behavioural stage where drivers can shift from utilitarian to hedonic motivations and signals that future studies should account for the shift from adoption to continuance.

Valuable insights are provided into how grocery retailers can secure continued intention through enjoyment and price value, going beyond ease of use and usefulness, to use retailers' shopping apps. Since ease of use is a strong driver of usefulness, enjoyment, and price value, grocery retailers should ensure their apps are easy to learn, do what they are supposed to do, are clear and understandable, and are flexible to interact with. However, because enjoyment is a stronger driver of continued intention than perceived price value, it is important that grocery retailers ensure their apps are pleasant and fun to use, as this trumps price value from using the apps, thereby focusing on hedonic value. This might include gamified shopping experiences (e.g. rewards) and interactive and visually engaging interfaces, as well as personalised basket suggestions and real-time order tracking. In addition to centring on the enjoyment of the app, grocery retailers should focus on price value, as it acts as a complementary mediator. This suggests that consumers still care about the cost-benefit of shopping for their groceries using a same-day delivery service app. Price value requires grocery retailers to ensure their products are perceived as reasonably priced and value for money, and they should offer a variety. Specifically, targeted promotions and bundling should be offered based on previous purchases to enhance value perceptions without eroding profitability, as the promotions are more targeted and likely to be effective. In terms of target markets, online grocery delivery apps should focus on targeting less innovative consumers, as this strengthens the conditional effect of ease of use on enjoyment by offering guided tutorials, videos, and user support features. Moreover, consumers with less favourable facilitating conditions should be targeted with data-light app versions, offline usability features, or partnerships with mobile operators to subsidise connectivity, which strengthens the conditional effect of usefulness on enjoyment as well as price value.

Beyond the managerial relevance, the findings also highlight broader societal considerations. As the growth of same-day grocery delivery apps increases, this could have negative consequences on the environment – for instance, increased delivery traffic and outputs. Therefore, in response, same-day grocery retailers could incentivise customers to use "green delivery slots" where consumers are incentivised for making consolidated orders or selecting slots where traffic would be reduced and deliveries would be faster. In addition, digital inclusion is important as consumers differ in their innovativeness, which requires that the apps are user-friendly and offer low-bandwidth functionality. Additionally, offering same-day delivery options results in the potential growth of the gig economy, which is fundamental to increasing employment in emerging markets like South Africa, where Checkers Sixty60 has created over 11,000 on-demand jobs since its inception (Thorne, 2025). Lastly, the study also offers policy relevance. As the study revealed that enjoyment and price value were important factors, same-day delivery grocery retailers may be tempted to apply algorithmic pricing, which may risk discriminatory pricing. This would require that regulators promote transparency in the use of algorithms, instil safeguards to consumer privacy, and prevent exploitative pricing practices that could be regarded as discriminatory.

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