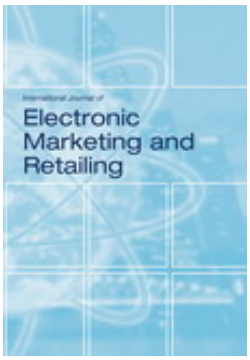

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How customer expectations drive loyalty to food delivery app brands

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How customer expectations drive loyalty to food delivery app brands

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Abstract: Consumers frequently use food delivery apps due to time constraints or the desire to explore diverse cuisines. These apps offer convenience and accessibility, but user loyalty is also shaped by factors such as ease of use, performance expectations, information quality, self-efficacy, and user enjoyment. This study analyses how user expectations contribute to brand loyalty in food delivery apps. A quantitative survey of 160 users was conducted, and data were analysed using structural equation modelling via Smart PLS. Results indicate that information quality and self-efficacy positively affect perceived ease of use; in turn, ease of use and self-efficacy influence performance expectations. Both performance and effort expectations significantly impact brand loyalty. Interestingly, information quality does not directly influence performance expectations, possibly due to users relying on external sources. The findings enhance understanding of user behaviour and provide insights for future research on digital food service platforms.

Keywords: food delivery app usage expectations; information quality; self-efficacy; revisit intention; word of mouth.

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1 Introduction

Food delivery services are among the most extensively studied sectors within the digital platform economy (Haidar, 2024), as people increasingly opt for quick and affordable meals for reasons of practicality and convenience. As Belanche et al. (2020, p.1) state, "People search for new alternatives to make everyday tasks easier and adapted to their lifestyles". In recent years, with the growth of the internet and consequently e-commerce, new online commerce platforms have emerged, notably food delivery apps. These are mobile applications that allow smartphone users to access restaurants and their menus without the need for physical contact (Eu and Sameeha, 2021; Lavu, 2020).

With home delivery, consumers tend to choose these apps at times that are most convenient for them, for example, when they don't have time to cook, or when they crave different types of food (Liu et al., 2023). Chai and Yat (2019) states that the need for quick and convenient meals is the most common reason for choosing food delivery apps. Therefore, apps bring a great advantage to individuals, since they can order what they want without leaving their places, and at any time of the day, regardless of where they are. The growth of this market is based on two consumer trends: preferring to eat at home rather than going to a restaurant. And opting for ready-made food rather than cooking (Fernandes, 2017). For this reason, food delivery apps have become globally widespread and commonly used (Kumar et al., 2021).

When selecting an app, consumers are often faced with several alternatives such as UberEats, Glovo, Pede e Come, Bolt Food, No Menu, and SendEat. Ultimately, they

choose the most suitable based on available offerings (Barros and Felix, 2022). Some factors to consider when selecting an app include competitive pricing (Gunawan et al., 2019; Osman et al., 2024), providing the greatest variety of products or services (Zanquet et al., 2022), ease of use (Lee et al., 2019; Al-Shamaileh and Sutcliffe, 2023), ensuring a positive delivery and customer experience (Ermida and Saur-Amaral, 2023), and service quality (Pereira, 2020). Other relevant factors influencing app choice include the impact of social groups and media (Eu and Sameeha, 2021), the consumer's state of mind (Correia, 2011), lifestyle (Belanche et al., 2020), safety concerns (Geraldo and Mainardes, 2017), and perceived value of the service (Osman et al., 2024). When consumers decide to use a food delivery app, they typically recognise its usefulness in satisfying their needs and desires. Several factors influence their decision to use the service, including convenience, trust, food quality, and user interface design. Convenience is especially important, as users seek quick and easy access to meals without the need to cook (Osman et al., 2024). In addition, the variety of restaurant options available significantly improves their satisfaction and encourages frequent use (Jadhav et al., 2023). Understanding these elements can help companies tailor their offerings to effectively meet consumer needs. We aim to determine whether information quality and self-efficacy affect performance and effort expectations related to food delivery apps, and consequently, brand loyalty measured by revisit intention and recommendations.

The abundance of external information sources (e.g., social media, third-party reviews) may dilute the impact of the information quality provided directly by the app on performance expectations. There is no consensus on this issue. Liu et al. (2023) demonstrated that online reviewing information positively influences perceived benefits and customer satisfaction, which, in turn, affects loyalty. Conversely, Ermida and Saur-Amaral (2023) found that factors such as delivery experience and overall customer experience influence the usage of food delivery apps, while information quality did not have a significant impact. Furthermore, there is a lack of research on the primary factors that motivate users to adopt and use food delivery apps (Ali et al., 2023). Examining how changes in consumer habits influence repurchase and revisit intentions (Lee et al., 2019) remains a relevant area for future investigation. Additionally, in contexts where technological barriers affect certain demographic segments, it is important to explore whether self-efficacy influences performance and effort expectations, and indirectly, app loyalty. Consequently, further studies are needed to enhance understanding of these dynamics, particularly within the Portuguese context, where research on this topic is limited.

Given the above, this article aims to answer the following question:

- What role do the expectations of users of food delivery apps play in customer loyalty to the app brand?

To this end, and based on the app of the favourite brand, the following research objectives were formulated:

a identify factors that determine the app's performance and effort expectations.

b check whether the app's performance and ease of use determine customer loyalty, measured by the intention to continue using it and recommend it.

The population of this study consists of users of food delivery apps. To achieve the research objectives, an empirical study with quantitative characteristics was carried out. The data collection instrument was a questionnaire, with the study having a cross-sectional design. The data obtained was analysed using the Statistical Package for Social Sciences (SPSS) and Smart PLS 4.0 software to estimate the structural equation model.

This study aims to contribute to enhancing theoretical knowledge in context and research areas. Practically, it is expected to yield useful results for the management of marketing, apps, and content, facilitating user loyalty to apps through the adoption of measures that improve their ease of use and performance.

This article is organised into five topics: introduction, theoretical background and development of hypothesis, methodology, discussion of results, and conclusion with main limitations and suggestions for future research.

2 Theoretical framework and research hypothesis

2.1 Food delivery apps

The online food delivery service supported by an app can be defined as any meal ordering transaction with monetary value carried out via mobile services, such as smartphones or other digital devices [Prasetyo et al., (2021), p.1]. According to Kumar and Shah (2021), food delivery apps can be classified into two categories: those operated by individual restaurants, which create their apps, such as Telepizza and Burger King, and platforms that serve as intermediaries between consumers and multiple restaurants, such as Uber Eats and Glovo.

Nowadays, companies and brands can reach consumers more easily through technology. The advancement of technology and internet-enabled services – particularly smartphones and mobile apps - has significantly transformed the way consumers interact with brands [Arghashi and Yuksel, (2022), p.1]. Food delivery apps have become an essential tool for businesses, particularly restaurants, leading to a significant increase in their usage in recent years. This trend is driven by the growing preference for fast, convenient, and cost-effective. Consumers increasingly opt for delivery instead of dining out. These app enable consumers to order whenever and wherever they want without pressure. Additionally, apps facilitate online payments, provide access to menus from a variety of restaurants, and include reviews from other users. These factors can influence consumers' decisions when choosing a service. As a result, for users, the use of food delivery apps is often motivated by practicality, ease, speed, convenience, comfort, and the enjoyment of a pleasurable and satisfying experience (Guarnieri and Vieira, 2023).

One of the reasons for the growth of food delivery apps was the COVID-19 pandemic. It was in early 2020 that the virus spread to several countries. In response to this situation, companies had to implement several measures, including the closure of many catering businesses. As a result, many of these companies turned to online food delivery services supported by apps, which provided a safe and cost-effective way to continue marketing and selling their products during the pandemic. For consumers, it was also a highly viable option, as apps are recognised for their practicality, security, and convenience (Lopes, 2022). Li et al. (2022) found that, during and after the pandemic, consumer behaviour towards food delivery apps was influenced by factors such as

technical and utilitarian features, system attributes, emotional and hedonic aspects, service quality, and food-related qualities. According to Dutra and Zani (2020), the pandemic has increased demand for home delivery services as an alternative to leaving home. Consequently, the delivery sector has experienced remarkable growth in recent years, and the health crisis has further intensified this trend by accelerating the digitalisation of society.

2.2 Factors that make a food delivery app useful

A useful app meets consumers' needs, expectations, and desires. In other words, one that provides features and functionalities that add value and simplify tasks. As Dâmaso (2019) states, apps that make life easier for users become indispensable in their daily routines. Several factors contribute to an app's usefulness, including ease of use, practicality, quality of information available, search features, and filters, among others.

Effort expectancy, or perceived ease of use, refers to the individual's perception of how much effort is required to use the app. According to Davis (1989), perceived ease of use reflects the belief that using a certain technology will be free of effort, i.e., the degree of simplicity associated with a system.

Performance expectations (also referred to as perceived usefulness) relate to what users expect from a product or service. It is defined as the user's belief that using a system will enhance their task performance (Gomes and Farias, 2017). In essence, users choose apps that improve task efficiency (Davis, 1989).

Performance expectation indicates the outcome a user anticipates from using a particular technology. These may include improvement in efficiency, effectiveness, or productivity. It is one of the key factors influencing the user's intention to adopt and use technology [Miranda et al., (2020), p.3]. Effort expectation ends up being related to performance, since the easier it is to use an app, the greater its usefulness. Thus, the individual perceives that the app is easy to use, and it is useful in their daily lives. The study by Gomes and Farias (2017) shows that frequent users of an app have high levels of effort and performance expectations. The following hypothesis is, therefore, deduced:

H1 Effort expectations, based on perceived ease of use, have a positive influence on performance expectations.

Self-efficacy precedes effort and performance expectation among food delivery applications. "Self-efficacy thus denotes the belief people hold in their ability to execute a task and it is a moderator of perceived ease of use" [Silva et al., (2022), p.4]. It represents one's belief in one's ability to perform tasks effectively; Heslin and Klehe (2006) define it as one's belief in performing specific tasks. It influences how individuals perceive and interact with technology – especially when apps are disorganised, challenging to navigate, or lack sufficient information, which can impair usability and lead to a sense of frustration or incapacity.

Evidence indicates that self-efficacy positively impacts performance expectancy, social influence, and effort expectancy – key determinants in mobile learning contexts (Sung et al., 2015). Gain-framed performance feedback enhances exercise self-efficacy and outcome expectations, subsequently enhancing usage intentions in adopting fitness apps (Lim and Noh, 2017). Additionally, self-efficacy, along with social support and good app design, affects mindfulness-based intervention outcomes like reduced phenomena and increased responsiveness (Lin et al., 2020). In the context of food

delivery, recent research shows that menu variety significantly boosts perceived value and satisfaction, mediated by trust and self-efficacy (Aman et al., 2022; Macias et al., 2023). Furthermore, individuals with an experiential shopping orientation exhibit stronger variety-seeking behaviour (Murray et al., 2022). In food delivery app contexts, this suggests that enjoyment may enhance performance expectations through increased menu exploration. However, the relationship between self-efficacy and performance may be complex; while overall, it is positive, overconfidence may decrease subsequent performance (Moores and Chang, 2009). Increased self-efficacy among food delivery apps leads to greater confidence in overcoming usage difficulties and enhances effort and performance expectations. As Silva et al. (2022) and Souza and Souza (2004) demonstrate, effort expectancy is influenced by self-efficacy and Sung et al. (2015) confirm its positive influence on effort and performance expectations. Therefore, the following hypotheses were formulated:

H2 Self-efficacy has a positive influence on effort expectancy, based on perceived ease of use.

H3 Self-efficacy has a positive influence on performance expectations.

Information quality refers to how app content is presented. Since food delivery apps are accessed through mobile screens, the information must be clear, objective, and easily readable. If a brand communicates using these standards, the app is perceived as higher quality by consumers. “Depending on use and purpose, information quality may be accessed through understandability, reliability, timeliness, and usefulness” [Lee et al., (2019), p.3].

Information quality is commonly linked to both effort and performance expectations. The less effort the consumer makes to obtain and understand the information, the greater the perceived ease of use of the app, and the greater the value and quality of the information. If the information is inaccurate, irrelevant, or confusing, quality drops. Conversely, error-free and relevant content enhances perceived quality because it meets the consumer’s expectations (Rascão, 2016). As Kumar (2023, p.3) notes, “High information quality aids decision-making by reducing buyer risk of providing useful information to consumers”. In addition to helping users make decisions, high information quality affects their performance and effort expectations (Lee et al., 2019; Su and Chao, 2022). To this end, the hypotheses described below were formulated:

H4 The quality of information positively influences performance expectations.

H5 The quality of information positively effort expectancy, based on the perception of ease of use.

2.3 Food delivery app brand loyalty

Consumers’ willingness and desire to repurchase a service or product can foster brand loyalty. However, if the app is confusing, characterised by poorly placed information and unintuitive interactions (e.g., functionalities that are difficult to locate and understand), it results in poor user experience. Conversely, if the app is easy to use, consumers perceive that they need to exert less effort, leading to a positive user experience. This, in turn, may increase their intention to revisit the app and recommend it to others. As Lee et al. (2019) state, stronger perceptions of ease of use enhance users’ intention to adopt and continue

using technology. This relationship was also supported by the study of Al-Maroof et al. (2020), who found that the expectation of effort positively influences consumers' intentions. Based on this understanding, the following study hypothesis was formulated:

H6 Effort expectancy, based on the perception of ease of use, has a positive influence on the intention to revisit the app.

Home food delivery apps make life easier for consumers because they don't have to go to the restaurant. If something makes people's day-to-day tasks easier, it becomes useful. To perceive something as useful means believing it can satisfy one's needs and help achieve goals. Therefore, if consumers prefer one brand of app over another, it is natural for them to value it more, as they are often willing to pay a premium for its services due to their recognition of its usefulness. Furthermore, the fact that consumers find the app useful is a key reason for them to promote it and revisit it in the future. Jun et al. (2021) and Al-Maroof et al. (2020), conclude in their studies that performance expectations have a significant influence on consumers' attitudes concerning the intention to continue visiting and using an app. The following hypothesis was formulated:

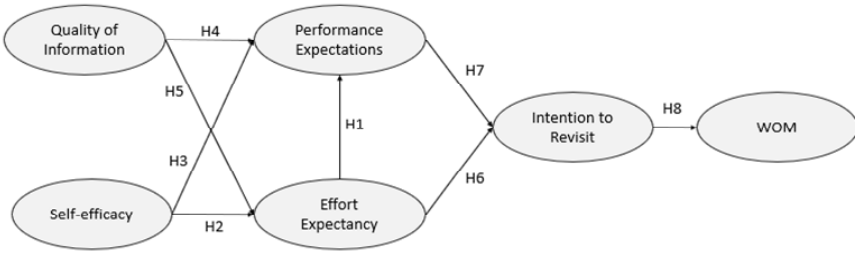
H7 Performance expectations have a positive influence in the intention to revisit the app.

According to Dores (2022), citing Heesup Han and Ryu (2009), brand loyalty refers to consumers' favourable attitudes toward a product or service, along with their frequent repurchase intention. Recent studies further support this by showing that diverse menu offering improve consumers' likelihood to revisit and recommend food delivery apps – thereby reinforcing brand loyalty (Aman et al., 2022; Macias et al., 2023). Therefore, consumers who intend to revisit a given app can become loyal to its brands and actively promote it. Therefore, it can be said that the intention to revisit the app can lead to word of mouth (WOM), hence the formulation of the following hypothesis:

H8 The intention to revisit the app positively influences WOM.

Schematically, the theoretical framework supports the following conceptual model (Figure 1).

Figure 1 Conceptual model and research hypotheses



Source: Own elaboration

3 Methodology

The empirical study was conducted using cross-sectional data collected via a structured online questionnaire developed with Google Forms and distributed through social media

networks. A total of 160 food delivery app users responded, forming a non-probabilistic convenience sample. Participants were asked whether they used apps to buy food, and if so, they were prompted to indicate their favourite app and to complete the questionnaire based on that app. The first page of the questionnaire informed participants that their responses would be anonymous and that there were no right or wrong answers. Additionally, clear and accessible language was used in all questions, and the proposed conceptual model was not disclosed to participants. All participants provided informed consent before accessing the questionnaire.

The sample had the following characteristics: 54.3% were female, 25.9% male, and 1.0% preferred not to disclose their gender. Ages ranged from 18 and 65, with a mean age of 35. Regarding marital status, 53.8% were single, living alone (24.4%) or in small households. In terms of education, 57.4% had completed higher education. Most respondents were employed (68.1%), while 16.9% were students. Although there were responses from across all Portuguese districts, the majority came from Leiria (28.9%) and Castelo Branco (24.4%). Six brands of food delivery apps were identified, but Uber Eats was the most popular, selected by 65.63% of respondents, followed by Glovo (23.75%).

The scales used to measure the study variables had been previously validated, with suitable adaptations for this research context. Five-point Likert scales were employed, ranging from 1 – 'strongly disagree' to 5 – 'strongly agree'. A back-translation procedure was followed: the original English items were translated into Portuguese and then translated back into English by two experts. In addition, a pre-test was carried out with 15 individuals who matched the target population. Based on their feedback, no revisions were necessary.

Three items were used to measure the effort expectancy: one from Choi (2020) and the two from Lee et al. (2019). The three items from Hong et al. (2021) were used to measure performance expectancy. Three of the four items presented by Silva et al. (2022) were used to measure the self-efficacy variable. Information quality was measured using four items: one from Kapoor and Vij (2018) and the other from Kong et al., (2020). Three items from Blanco-González et al. (2023) were used to measure the intention to revisit. WOM was measured using four items presented by Kong et al. (2020). Items in the scales are shown in Table 1.

Data were analysed using SPSS for initial descriptive and exploratory factor analysis and SmartPLS 4.0 for structural equation modelling (SEM). An exploratory factor analysis was first conducted to test the presence of a dominant single factor. This test revealed the absence of a single factor capable of explaining the majority of the variance in the data, with the first factor explaining only 12.232% of the total variance. In addition, the Kaiser-Meyer-Olkin (KMO) measure was 0.8281 (KMO > 0.7), and Bartlett's test of sphericity was significant ($p < 0.01$), indicating that the data was suitable for analysis using structural equations (Hair et al., 2010).

We then proceed to test the hypothesis using Smart Pls 4.0. We chose to use this software because, although SEM software like AMOS or LISREL is suitable for larger samples, the determination of an appropriate sample size depends on several factors such as the model's complexity, the number of parameters, data quality, and statistical assumptions. Based on existing guidelines, a minimum of 200 participants is recommended for SEM models of moderate complexity to ensure stable and reliable estimates (Boomsma, 1982, 1985; Kline, 2005). Given our sample size and the model's characteristics, SmartPLS was a more appropriate choice because it is specifically designed to produce valid results with smaller samples. Smart PLS 4.0 allows for

calculating "the correlations between constructs and their measures or observed variables or items (measurement models) and then perform linear regressions between constructs (structural models)" [Ringle et al., (2014), p.2]. This is an appropriate estimation method due to the exploratory nature of the research objective and is suitable for small samples, as is the case (Ringle et al., 2012, 2015; Bido and da Silva, 2019).

4 Results

Although SmartPLS simultaneously estimates the parameters of both the measurement and structural models, the results must be analysed and evaluated in three phases (Hair et al., 2011). Therefore, the findings are presented in three sections: the first section analyses the measurement model, examining its consistency and validity; the second section tests the structural model, identifying whether the study hypotheses were corroborated or not; and finally, the third section interprets the obtained results.

4.1 Analysis of the measurement model

Before evaluating reliability and validity, the variance inflation factor (VIF) means, standard deviations and factor loading were assessed (Table 1).

We then proceed to test the hypothesis using Smart Pls 4.0. We chose to use this software because, although SEM software like AMOS or LISREL is suitable for larger samples, the determination of an appropriate sample size depends on several factors such as the model's complexity, the number of parameters, data quality, and statistical assumptions. Based on existing guidelines, a minimum of 200 participants is recommended for SEM models of moderate complexity to ensure stable and reliable estimates (Boomsma, 1982, 1985; Kline, 2005). Given our sample size and the model's characteristics, SmartPLS was a more appropriate choice because it is specifically designed to produce valid results with smaller samples. Smart PLS 4.0 allows for calculating "the correlations between constructs and their measures or observed variables or items (measurement models) and then perform linear regressions between constructs (structural models)" [Ringle et al., (2014), p.2]. This is an appropriate estimation method due to the exploratory nature of the research objective and is suitable for small samples, as is the case (Ringle et al., 2015; Bido and da Silva, 2019). Although there is some variability in the answers, the averages are higher than 3. Considering that the Five-point Likert scale was used, the results show that the respondents agree with the questions they were asked. Finally, the factor loadings of the items, with values greater than 0.7, show reliability (Fagundes et al., 2020).

Once the individual reliability of the items has been verified, convergent validity was analysed using the average variance extracted (AVE) and internal consistency, based on Cronbach's alpha and composite reliability. The results shown in Table 2 comply with the recommendations of Hair et al. (2019): the composite reliability values of the concepts are greater than 0.7 ($CR > 0.7$), the AVE is greater than 0.5 ($AVE > 0.5$) and the Cronbach's alpha values are greater than 0.7 ($\alpha > 0.7$). Thus, it can be concluded that there is internal consistency and convergent validity of the measurement model.

Discriminant validity was also achieved, as all correlations between the constructs are significantly less than one and the square root of AVE is greater than any inter-factor correlation in the matrix (Bagozzi and Heatherton, 1994; Fornell and Larcker, 1981; Hair

et al., 2010). The values of HTMT radio, above the diagonal, with the square root of AVE, are all less than 0.85 (Henseler et al., 2015), showing discriminant validity between the constructs (Table 3).

Table 1 Results of the descriptive analysis of each item

Variable	*Code*	*Item*	*Loadings*	*VIF*	*Average*	*SD deviation*
Effort expectancy (EE)	EE1	This food delivery app is easy to use.	0.906	2.756	4.49	0.60
	EE2	It's easy for me to become skillful at using this food delivery app.	0.871	2.613	4.42	0.67
	EE3	My interaction with this food delivery app is clear and understandable.	0.918	2.687	4.44	0.66
Performance expectation (PE)	PE1	Using this *app* is an efficient way to order my meals.	0.886	2.137	4.26	0.74
	PE2	Using this *app* makes life easier for me.	0.893	2.119	4.16	0.75
	PE3	In general, using this *app* is a useful way to order meals.	0.910	2.413	4.38	0.65
Self-efficacy (SE)	SE1	I'm confident in using this food delivery app, even though I've never used a system like this before.	0.863	1.824	3.96	0.84
	SE2	You could use this food delivery app just by following the instructions.	0.836	1.627	4.18	0.79
	SE3	I'd be confident about using this food delivery app if someone showed me how to do it first.	0.758	1.352	4.05	0.97
Quality of information (QI)	QI1	This food delivery app provides accurate information.	0.881	2.644	3.90	0.84
	QI2	This *app* provides enough information for me to make decisions.	0.912	3.369	4.11	0.72
	QI3	This *app* provides relatively complete information.	0.825	2.165	4.04	0.82
	QI4	This *app* provides reliable information.	0.867	2.336	4.12	0.69
Intention to revisit (IR)	IR1	I consider this *app* to be my first choice compared to other service providers	0.873	2.238	3.84	0.88
	IR2	I have a strong intention to visit this *app* again.	0.920	3.021	3.94	0.81
	IR4	I plan to continue shopping on this *app* in the near future.	0.916	2.906	4.11	0.67

Source: Own elaboration

Table 1 Results of the descriptive analysis of each item (continued)

Variable	*Code*	*Item*	*Loadings*	*VIF*	*Average*	*SD deviation*
WOM	WOM1	I would tell other people positive things about this *app*.	0.906	3.455	3.89	0.80
	WOM2	I would provide other people with information about this *app*	0.908	3.766	3.94	0.72
	WOM3	I am likely to recommend this *app* to my friends or other people.	0.935	4.323	3.93	0.81
	WOM4	I am likely to encourage others to consider using this *app*.	0.886	2.918	3.70	0.91

Source: Own elaboration

Table 2 Results of internal consistency and covergent validity study

	Cronbach alpha	*rho_A*	*Composite reliability (CR)*	*Average variance extracted (AVE)*
Self-efficacy	0.756	0.763	0.860	0.673
Performance expectations	0.877	0.877	0.924	0.803
Effort expectancy	0.880	0.881	0.926	0.807
Intention to revisit	0.887	0.890	0.930	0.816
Quality of information	0.895	0.908	0.927	0.760
WoM	0.930	0.939	0.950	0.826

Source: Own elaboration

Table 3 Discriminant analysis (Fornell-Larcker criterion vs. Heterotrait-Monotrait ratio-HTMT)

	Self-efficacy	*Performance expectations*	*Effort expectancy*	*Intention to revisit*	*Quality of information*	*WoM*
Self-efficacy	*0.820*	0.656	0.699	0.359	0.663	0.327
Performance expectations	0.534	*0.896*	0.594	0.429	0.447	0.277
Effort expectancy	0.573	0.522	*0.898*	0.277	0.660	0.299
Intention to revisit	0.293	0.381	0.420	*0.903*	0.602	0.642
Quality of information	0.553	0.403	0.591	0.542	*0.872*	0.642
WoM	0.273	0.252	0.276	0.589	0.484	*0.909*

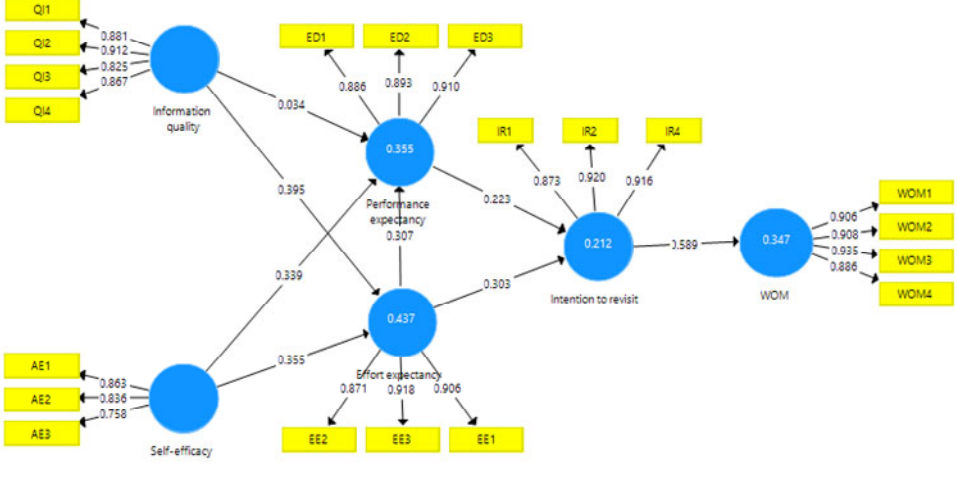
Source: Own elaboration

4.2 Analysis of the structural model

After analysing the consistency and reliability of the scales, the measurement model was analysed (Figure 2). The bootstrap resampling technique was used with 5000 sub-samples to obtain stable results. The first stage of this analysis is to evaluate Pearson's coefficients of determination ($R^{2)}$) and the structural coefficients. According to com Falk and Miller (1992), R^2 values should be higher than 0.1, otherwise, this will indicate insufficient information. In the case under study, the R^2 values of the dependent variable are higher than 0.1 (R^2 of performance expectations = 0.355; R^2 of effort expectancy = 0.437; R^2 of intention to revisit = 0.212 and R^2 of WOM = to 0.347).

In addition to the R^2 values, the effect sizes (f^2) were also calculated to assess the individual contribution of each exogenous construct to the explained variance of the endogenous constructs, as recommended by Cohen (1988). The results indicate that self-efficacy shows a moderate predictive effect on effort expectancy ($f^2 = 0.155$) and a small effect on performance expectancy ($f^2 = 0.107$). Information quality has a negligible effect on performance expectancy ($f^2 = 0.001$) but a moderate effect on effort expectancy ($f^2 = 0.192$). Effort expectancy displays a small predictive effect on both performance expectancy ($f^2 = 0.082$) and intention to revisit the app ($f^2 = 0.085$). Performance expectancy also shows a weak influence on revisit intention ($f^2 = 0.046$). Notably, revisit intention reveals a large predictive effect on word-of-mouth behaviour ($f^2 = 0.532$), highlighting its central role in the proposed model. Regarding the chi-square test, it is important to emphasise that this is not a central criterion in PLS-SEM, as this method does not rely on covariance matrices and the test is highly sensitive to sample size (Hair et al., 2021). However, the discrepancy between the chi-square value of the estimated model ($\chi^2 = 509.685$) and that of the saturated model ($\chi^2 = 471.294$) is modest and does not compromise the validity of the estimated model, particularly considering that PLS-SEM prioritises predictive relevance over absolute fit.

Figure 2 Results of the structural model equation (see online version for colours)



Source: SmartPLS Output

In order to corroborate or not the research hypothesis, it is necessary to analyse the t-values associated with the *std* β and the respective *P-values*, which indicate the

statistical probability of a given hypothesis being verified or not. Thus, hypotheses with *t-values* equal to or greater than ± 1.96, i.e., with the significance of at least 0.05 and the reliability of 95%, are considered to be confirmed. The results of these tests are shown in Table 4.

Analysis of Table 4 indicates that, out of the 8 hypotheses, only Hypothesis 4 not was not confirmed. Specifically, the information quality of the food delivery apps does not influence the user's performance expectancy.

Table 4 Results of the test hypothesis

Research hypotheses		*Std β*	*t-student*	*p-values*	*Status*
H1:	Effort expectancy -> Performance expectations	0.307	3.404	0.001	C
H2:	Self-efficacy -> Effort expectancy	0.355	4.748	0.000	C
H3:	Self-efficacy -> Performance expectations	0.339	3.744	0.000	C
H4:	Quality of information -> Performance expectations	0.034	0.342	0.732	NC
H5:	Quality of information -> Effort Expectancy	0.395	5.209	0.000	C
H6:	Effort expectancy -> Intention to revisit	0.303	3.833	0.000	C
H7:	Performance expectations -> Intention to revisit	0.223	2.704	0.007	C
H8:	Intention to revisit -> WoM	0.589	9.285	0.000	C

Notes: C – Corroborated; NC – Not corroborated

4.3 Discussion of the results

The results suggest that effort expectancy has a significant positive influence on performance expectancy ($\beta = 0.307$; $p < 0.01$). This aligns with prior findings by Calisir and Calisir (2004), Saadé and Bahli (2005) and Sugandini et al. (2018). The easier users perceive an app to be, the more useful they believe it is [Saadé and Bahli, (2005), p.2].

The second hypothesis – self-efficacy positively influencing effort expectancy – was supported ($\beta = 0.355$; $p < 0.001$). It can be said that consumers who find the app easy to use, without needing help, become proficient in its use. This result is consistent with studies by Al-Haderi (2013), Yusoff et al (2009) and Igbaria and Ilvari (1995).

The third hypothesis, which predicted that self-efficacy influences performance expectations, was also confirmed ($\beta = 0.339$; $p < 0.001$). When an individual has high self-efficacy, they tend to believe that they can carry out a task successfully, thus increasing their performance expectations. As Ramadania and Braridwan (2019, p.9) state "That the higher perceived usefulness will result in a positive attitude towards an intention to transact with the online store". In this case, the results show that the self-efficacy of users of food delivery *apps* has an impact on performance expectations, which coincides with the study by Usman et al. (2020).

The fourth hypothesis was not supported, i.e., in this study, the quality of information does not affect performance expectations ($\beta = 0.034$; $p > 0.05$). Similar results were obtained by Ermida and Saur-Amaral (2023), who found that information quality did not have a significant impact on the usage of food delivery apps. This result can perhaps be explained by the characteristics of the sample, which is young (predominantly 18–34-year-olds). It is normal for them to have more online shopping experience and to look for other sources of information when in doubt. As Marquêz (2022) points out, food delivery apps are used more by young people and adults from the middle classes, and this

is because they find it easier to use technology. This means that consumers already have some familiarity with apps, and, in this case, the quality of the information doesn't have such an impact on their performance expectations. Additionally, the abundance of external information sources (e.g., social media, third-party reviews) may dilute the impact of the information quality provided directly by the app on performance expectations. Furthermore, if the app does not provide accurate and complete information, this does not reduce performance expectations, as it will remain a useful method for ordering meals.

The fifth hypothesis is confirmed. The results show that the quality of the information affects the effort expectancy ($\beta = 0.395$; $p < 0.001$). The higher the quality of the information, the greater the ease of use of the *app*, associated with the expectation of effort. Normally, users tend to value the *app*'s ease of use. As stated by Martiniano et al. (as cited in Verkijika and Wet 2019), the difficulty of using delivery platforms can lead consumers to abandon the *app*. The results of this study are in line with the findings of Ali and Younes (2013) and Machdar (2016), which corroborate that the quality of information affects the expectation of effort.

Hypothesis H6 was confirmed. Indeed, the expectation of effort influences the intention to revisit the app ($\beta = 0.303$; $p < 0.001$). If the food delivery app is easy to use, this influences consumers' intention to purchase a service from that app again. This result is like that obtained by Hanjaya et al. (2019). Again, aligned with our results, the Al-Shamaileh and Sutcliffe (2023) study notes that ease of use and enjoyment are key determinants of continued use, underscoring the central role of effort expectancy in promoting behavioural intentions

Performance expectations also have a positive influence on the intention to revisit the app ($\beta = 0.223$; $p < 0.01$), corroborating hypothesis H7. This result is in line with previous studies by Sanchez-Franco (2010) and Wangpipatwong et al. (2008).

The intention to revisit the app influences WOM, corroborating Hypothesis H8 ($\beta = 0.589$; $p < 0.001$). Users with positive expectations intend to revisit the app and, consequently, are predisposed to spreading information about the app, as well as sharing their experience with others and recommending the brand. This relationship of influence has been empirically validated by other research, but in different contexts (Ramadhan et al., 2022; Li and Liu, 2014).

5 Conclusions

Today, food delivery apps have become an increasingly popular option, enabling consumers to order food without leaving their homes, regardless of their location. Due to their convenience, ease of payment, real-time order tracking, and other benefits, these apps have experienced exponential growth. As the number of app brands continues to rise, consumers have more choices and tend to consider various factors when selecting an app. Most notably, they evaluate the app's ease of use (effort expectancy) and performance expectancy, which can help explain consumer loyalty to a particular app brand. The quality of information affects the expectation of effort, not performance. Thus, the more complete and clear the app's information, the greater its ease of use, associated with the expectation of effort. However, it doesn't seem to influence the user's performance expectation, since the app is still useful for ordering meals, and users have other sources of information, namely their peers.

Self-efficacy affects both performance and effort expectations. This is because individuals say they could use the app if someone showed them how to do it first or just by following the instructions, i.e., they believe they can use this type of *app* even without ever having tried a similar system.

In turn, the effort expectancy influences the performance expectation: the easier the app is to use, the more useful it is perceived to be. Based on the results, the app makes the consumer's life easier insofar as the interaction is clear and understandable, and it is also easy to use. Expectations of the app's effort and performance positively influence the intention to revisit the app. Thus, as the user feels that the app is easy to use and has high performance, the greater the intention to revisit it. In turn, the intention to revisit the app also influences positive WOM. In this case, after a positive purchase experience in the app, the individual may share it with others. Therefore, app users' expectations are determinants of behavioural loyalty to food delivery app brands.

This study presents relevant insights into how consumers' expectations influence loyalty to food delivery apps. Theoretically, it contributes to our understanding of consumer behaviour in the digital domain by showing that expectations associated with ease of use and performance significantly shape users' intentions to revisit an app, besides recommending it to others. Particularly, it demonstrates that perceived ease of use (effort expectancy) and the perceived usefulness (performance expectancy) are key drivers of behavioural loyalty within this context. Furthermore, this study underlines the role of self-efficacy, which impacts both effort and performance expectations, emphasising the importance of individual confidence in using technology.

On a practical level, these study findings provide helpful directions for app developers and businesses operating in the food delivery market. By improving the usability of the app and ensuring that information is presented clearly and comprehensively can enhance users' experience, making the app easier and more enjoyable to use. When users find an app that is easy to use and understand how it works, they are more likely to revisit it and share positive experiences with other users, both within and outside the app. In turn, this positive word-of-mouth and satisfaction can increase customer loyalty, attract new users, and eventually increase sales for both the app providers and participating restaurants. Recent strategic management literature emphasises the importance of building dynamic capabilities in digital platforms – such as enhancing personalisation, agility, and information transparency – to sustain competitive advantage (Luo et al., 2023). This reinforces our findings, suggesting that investment in platform usability and information quality can serve as strategic capabilities that promote consumer loyalty.

As well as making theoretical and practical contributions, this study also has some limitations that should be considered in future research. The data were collected at a single point in time from a single source and therefore could have posed common method bias (Podsakoff et al., 2003). Future research could mitigate this risk by employing a longitudinal design and sourcing data from several different sources. Furthermore, the sample was non-probabilistic and consisted solely of Portuguese consumers, thereby limiting the capacity to generalise the findings. Although efforts were made to include participants from all regions of the country, the low sample size, albeit utilising robust software suitable for such a sample, is still a limitation. Convenience sampling, by definition, involves participant recruitment based on ease of access; as Bornstein et al. (2013) note, results emerging from this process cannot be readily generalised to the population in general due to the possibility of biases like under-representation of groups

and lack of randomness renders calculation of sampling error impossible. To increase external validity and the robustness of future findings, representative and larger samples should be used, preferably by adopting probabilistic sampling techniques (Henry, 1990). It would also increase generalisability and reduce potential biases to repeat this study using probability-based sampling techniques. Furthermore, exploring cultural differences in food delivery app usage or employing experimental designs would be valuable extensions.

The study was also limited to food delivery apps, and there may be differences between apps for commercialisation services and the delivery of other products. It would therefore be advisable in future research to add other variables, other apps, and to substantiate and diversify the study sample. Another limitation of this research is that it primarily draws upon TAM constructs and models, which are not fully representative of all determinants of consumer loyalty. More research would be beneficial to consider other theoretical frameworks, such as service quality (SERVQUAL) or consumer trust models, to gain more insight into consumer behaviour in the case of food delivery apps. Future research could also benefit from including factors such as age, income, and tech literacy as control variables or exploring their moderating effects, in order to gain a more nuanced understanding of the dynamics involved.

Declarations

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All authors declare that they have no conflicts of interest.

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