

Factors Influencing the Intent and Usage Behavior of Restaurant Delivery Apps

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Abstract

Purpose – The purpose this paper is to analyze the factors that influence the usage behavior of delivery applications.

Design/methodology/approach – A survey method was used and a questionnaire was applied. The sample size comprised 344 respondents. The Structural Equation Modeling (SEM) with estimation by Partial Least Squares (PLS) was used to analyze thirteen hypotheses proposed in the survey model.

Findings – The results support ten hypotheses and indicate that the Habit ($\beta = 0.580$; p -value < 0.001) is the factor greatest influence on the Intention to use applications for food delivery.

Originality/value – How far we researched, this is the first study of its kind to be conducted in Brazil and also the first in the world to propose the expansion of the model with the Susceptibility to Offer, Inovativeness and Convenience constructs for the study of the adoption of restaurant delivery applications.

Keywords – Intention of use; Behavior of use; Delivery applications; UTAUT

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1 Introduction

The incremental development of the internet has caused changes in human relations and, consequently, in the way products and/or services are marketed (Alalwan, 2020; Kulyk & Michałowska, 2016; Navimipour & Soltani, 2016). Among the forms of online consumption, mobile applications have become increasingly popular (Kiat, Samadi, & Hakimian, 2017; Luna, Montoro-Ríos, Liébana-Cabanillas, & Luna, 2017). Mobile apps are created and designed to be downloaded and used by smartphones or other similar mobile platforms such as iPads and other tablets (Alalwan, 2020).

Mobile communication is one of the most used media globally. Five billion people own mobile devices and a total of six billion people have signed up to these media around the world (Kiat, et. al., 2017). The technology is adopted not only for interpersonal relationships but also for selling and purchasing goods and services. Criteo (2018), an online advertising consulting firm, points out that apps account for 30% of worldwide mobile device sales of retailers who invest in mobile web and shopping apps.

Apps represent business opportunities and have been explored in research to analyze consumer attitudes towards online services, to identify how organizations can improve this means of distribution and contact with their customers, as well as to contribute to the literature on the topic, presenting factors that influence the intention to purchase (Alalwan, 2020; Kiat et al., 2017; Lee, Lee, & Jeon, 2017; Yeo, Goh, & Rezaei, 2017). Among these studies, Lee et al. (2017) and Yeo et al. (2017) explain that it is necessary to investigate food delivery apps, which, although not as popular as other means of ordering food, have seen growth in their number of users. According to Silva (2019), Brazil is one of the fastest-growing food delivery markets globally, and apps of this type increased their number of users by 20% in 2018 – well above the world average of 12%. In the same year, the delivery app sector earned more than R\$10 billion, and this revenue is expected to have been even higher in 2019. However, although restaurants around the world commonly adopt these systems, the factors affecting behavioral intentions concerning this new means of consumption have not been fully explored and tested by researchers, especially when it comes to the food sector (Alalwan, 2020; Lee et al. 2017). Thus, this research represents an advance in the literature regarding consumers' understanding of this business model. When analyzing the factors that

influence the usage behavior of delivery applications for restaurants, the literature has identified models used to assess the background affecting the intention to use and usage behavior of new technologies to purchase goods and services. These models include the Theory of Reasoned Action (TRA) presented by Hill, Fishbein, and Ajzen (1977), the Theory of Planned Behavior (TPB) conceived by Ajzen (1991), the Technology Acceptance Model (TAM) developed by Davis (1989), and the one adopted in this research, which is the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) of Venkatesh, Thong, and Xu (2012). This model was chosen because it allows researchers to examine which determinants affect the adoption of technology, taking into account social factors, facilitators, and the emotional aspect of the consumer (Talukder, Sorwar, Bao, Ahmed, & Palash, 2020).

However, in addition to the factors indicated by UTAUT2, presented in the theoretical framework of this research, we added constructs directly associated with the intention to use and usage behavior of delivery platforms: (i) susceptibility to offers, (ii) innovativeness, and (iii) convenience. The addition of constructs to the original model is based on the search to increase the model's explanatory capacity in a new market context in which it has not yet been used. Therefore, this research proposes and tests a new model for evaluating the framework associated with food delivery. In short, the theoretical contributions mainly revolve around the expansion of an already consolidated conceptual model to a new object in a different cultural context. In addition to this introduction, the article is structured in four other sections. Section two presents the theoretical background affecting the intention to use and usage behavior of apps. Next, the methodological procedures used are described. In part four, the data are reported and the results are discussed. Section five presents the conclusions, contributions, and limitations of the research.

2 Literature review

2.1 Assessment of the background affecting the intention to use and usage behavior of food delivery applications: UTAUT2

With the evolution of mobile technologies, companies around the world have the opportunity to expand their current business, since it is easier to reach

consumers anytime and anywhere through the combination of this technology and the internet (Meuter, Bitner, Ostrom, & Brown, 2005; Ramayah, Rahman, & Ling, 2018). However, online consumption media transform consumer behavior and attitudes (Lee et al., 2017; J. P.C. Martins & Slongo, 2014). As customers in the food service industry are fickle, organizations need to keep pace with changes in taste, fashion, and ease of access (Lee et al., 2017). The development and proliferation of smartphones have made it easier to meet consumers' demands by providing real-time connectivity of mobile applications, making food delivery apps popular with customers seeking speed and convenience. However, it is still necessary to understand which factors actually affect the intention to use and usage behavior of this technology in the food segment (Alalwan, 2020; K. Balasubramanian & Dean, 2015; Lee et al. 2017; Meuter et al., 2005).

Some empirical studies on food delivery applications have identified different factors that influence the acceptance and use of these applications. One such study is on online food applications conducted by Alagoz and Hekimoglu (2012). The authors found that factors such as usefulness, innovation, and confidence shape customer attitudes towards this technology. Another is the Chinese study conducted by Cho, Bonn, and Li (2019), who found that perceived value and customer attitudes towards food delivery applications are primarily influenced by the level of trust, design, and integrity of the product.

In the literature, Alagoz and Hekimoglu (2012) and Cho et al. (2019) identify the factors that influence a consumer's decision to use a product or technology, where it is necessary to understand intention to use. This construct is derived both from the model proposed by the Theory of Reasoned Action (TRA), presented by Hill et al. (1977), and from the Theory of Planned Behavior (TPB), conceived by Ajzen (1991). In both theories, the intention to use is a central factor that influences an individual to perform a specific behavior. Intentions are explored to identify the motivational factors that affect behavior and indicate how much people are willing to try and how much effort they plan to put into performing a behavior (Ramayah et al., 2018). In this sense, behavioral intention refers to the subjective possibility of the individual performing a specific behavior, thus influencing the behavior of users, which is associated with the act of consuming a particular product or technology (Ajzen, 1991; Davis, 1985; Hill et al., 1977; Ramayah et al., 2018; Venkatesh et al., 2012). Based on

the definition of these constructs, the first hypothesis of this research was elaborated (H1):

H1: "Intention to use" has a positive impact on "usage behavior."

When exploring the background directly related to the "intention to use and usage behavior" of technologies such as apps, some studies (Feng, 2017; Tak & Panwar, 2017) observe that some factors are considered necessary for consumers when they build a relationship with the technologies. Among these antecedents, the level of individual innovation, classified by Agarwal and Prasad (1998) as personal innovativeness, is traditionally evaluated in the study of individual behavior in the case of innovations. This construct is considered an influential factor in the adoption and use of technology, as it is a personality trait related to an individual's receptivity to new ideas (Agarwal & Prasad, 1998; Feng, 2017; Kessler & Martin, 2017; Lu, Yao, & Yu, 2005; Tak & Panwar, 2017). A common observation is that individuals with a high degree of innovation are more ambitious and more willing to try new brands and are interested in the results of using them (Feng, 2017). In contrast, those with a low cognitive innovation focus on the effort, ease of use, and playfulness of the technology (Kessler & Martin, 2017). Since the concept of innovativeness can be defined as the tendency of an individual to test new technologies (Kiat et al. 2017), the following hypothesis was elaborated:

H2: "Innovativeness" has a positive impact on "intention to use."

In addition to innovation, some studies such as those of Feng (2017) and Tak and Panwar (2017) suggest evaluating deal-proneness regarding the use of apps. This construct was defined by Webster (1965) as the propensity of consumers to buy products that have promotional offers, that is, a reduced price. In this study, "offer susceptibility" is consumer purchasing behavior in which a particular brand is sold based on an agreement between the parties. This agreement is based on promotional prices, which can occur through a price reduction, promotional offers (e.g., coupons), launch offers, and increased volume (Hackleman & Duker, 1980). Since the consumer must know the purpose of the platform and have experienced it to become susceptible to such offers, Tak and Panwar (2017) suggest that susceptibility to offers is only related to

usage behavior. Therefore, the third hypothesis proposed in this research is:

H3: “Susceptibility to offers” has a positive impact on “usage behavior.”

One of the characteristics that differentiate online media from conventional media is their ability to generate value by offering convenience and accessibility anywhere and at any time (Berry, Seiders, & Grewal, 2002; Jiang, Yang, & Jun, 2013; Ribeiro, 2018; Yeo et al., 2017). The studies summarize and classify convenience into two main elements: time and effort (Jiang et al., 2013). Yeo et al. (2017) explain that convenience is related to the economy of time and energy that consumers spend and expend (convenience) to buy a product, which increases the value of the services provided. Berry et al. (2002) add that when time costs related to a specific service increase, consumers’ perceptions about the service’s convenience decrease, thus influencing the consumption decision. Effort savings, in turn, refer to the minimization of cognitive, physical, and emotional efforts that consumers must expend to purchase goods and services (Berry et al., 2002; Jiang et al., 2013). Since “convenience” is related to the benefits of a product or service and may affect the consumer’s decision (Jiang et al., 2013; Ribeiro, 2018; Yeo et al., 2017), the fourth hypothesis of this research is:

H4: “Convenience” has a positive impact on “intention to use.”

In order to complete the group of antecedents that influence the intention to use and usage behavior of specific apps for food delivery, it is observed in the literature that there are theoretical aspects of consumer behavior used to assess the acceptance of new products, services, and/or technologies. Among them is the Unified Theory of Acceptance and Use of Technology (UTAUT2) developed by Venkatesh, Morris, Davis, and Davis (2003). This analyzes consumer actions concerning technologies through seven constructs that directly influence the intention to use: (i) expected performance; (ii) expected effort; (iii) social influence; (iv) price value; (v) hedonic motivation; (vi) facilitating conditions; and (vii) habit. As observed by Venkatesh et al. (2012), the UTAUT2 constructs explain intention to use by 74% and usage behavior by 52%.

“Expected performance” refers to the degree to which technology will empower consumers to carry out their activities (Alalwan, 2020; Alalwan, Dwivedi, &

Rana, 2017; Okumus, Ali, Bilgihan, & Ozturk, 2018; Venkatesh et al., 2012). Alalwan (2020) provides statistical evidence to support the significant role of this construct in the customer’s intention to use food apps. Therefore, hypothesis 5 is suggested:

H5: “Expected performance” has a positive impact on “intention to use.”

“Expected effort” is the degree of ease associated with the use of technology by consumers (Alalwan, 2020; Alalwan et al., 2017; Okumus et al., 2018). Davis, Bagozzi, and Warshaw (1989) explain that the individual’s intention to accept a new system is not only predicted by how much it is positively valued. It is also related to how much the use of that system is not difficult and, consequently, by the amount of effort to be expended. In this sense, as in other studies on food apps (Alalwan, 2020; Alalwan et al., 2017) it is important to investigate whether the fact that consumers complete the entire ordering process without any help or assistance from the restaurant staff has any influence on their intention to use the system. So hypothesis six is:

H6: “Expected effort” has a positive impact on “intention to use.”

The “social influence” construct, in turn, is defined by Venkatesh et al. (2003) and Venkatesh et al. (2012) as the extent to which an individual perceives the degree of approval of specific behavior by other people they consider important. Among these people, the influence of friends, family, colleagues, superiors, and experienced individuals known by the potential adopter of a new product stands out (Venkatesh et al., 2003; Venkatesh et al., 2012). Social influences have their origin in behavior-attitude theories (Fishbein & Ajzen, 1975). Recognizing that the incorporation of the social environment could increase the explanation of the intention to use new technologies, Venkatesh et al. (2003) inserted and validated social influences as a significant predictor of intentions in the original UTAUT model and revalidated it in the UTAUT2 model (Venkatesh et al., 2012). Based on the premise that several consumer-oriented products and services generate some doubts and uncertainties (Kalish, 1985; Song & Montoya-Weiss, 2001), it is believed that the influence of the social circle closest to each one can act in the process of generating knowledge. Primary and secondary socialization works to form beliefs and

perceptions about new products and services (Fishbein & Ajzen, 1975; Morosan & DeFranco, 2016). The seventh hypothesis is:

H7: “Social influence” has a positive impact on “intention to use.”

Price can have a substantial influence on consumers. This is positive when the benefits of adopting a given system are considered higher than the monetary cost (El-Masri & Tarhini, 2017). “Price value” is defined as the consumers’ cognitive trade-off between the perceived benefits of applications and the monetary cost of using them (Kranthi & Ahmed, 2018; Venkatesh et al., 2012). Venkatesh et al. (2012) explain that this construct is among the most influential factors in the continued use of mobile internet services by consumers. Consequently, price has been included as a predictor of the use of restaurant delivery apps. Accordingly, the eighth hypothesis is proposed:

H8: “Price value” has a positive impact on “intention to use.”

“Hedonic motivation” represents consumers’ beliefs that using a product or service is fun (Venkatesh et al., 2012). Changes occurred in the philosophy of system design when it was discovered that consumers used them not only to complete tasks but also for entertainment, suggesting non-utility functions (Dwivedi, Shareef, Simintiras, Lal, & Weerakkody, 2016). Venkatesh et al. (2012) added hedonic motivation to UTAUT2 to capture excitement and pleasure. They argue that this construct will be more influential for voluntary systems (Alalwan, Dwivedi, Rana, & Algharabat, 2018; Christino, Silva, Cardozo, Carrieri, & Nunes, 2019; Tak & Panwar, 2017). Most research focuses on the hedonic side of leisure services, such as shopping and sports (Alalwan, 2020; Brown & Venkatesh, 2005; Venkatesh et al., 2012). However, some empirical studies have verified the effect of this construct on the intention to use apps, such as for banks (Alalwan et al., 2017) and food (Alalwan, 2020). Thus, the ninth hypothesis of this research is:

H9: “Hedonic motivation” has a positive impact on “intention to use.”

Regarding “facilitating conditions,” when presenting UTAUT2, Venkatesh et al. (2012) highlight some particularities. The authors observe that in an organizational environment, this construct can serve as

a proxy for real behavioral control and directly influence behavior, as suggested by Ajzen (1991). In commercial settings, facilitating conditions represent the extent to which a consumer believes some resources facilitate the completion of the task using some type of information system technology (Morosan & DeFranco, 2016). In this sense, facilitating conditions will act more like the behavioral control perceived in the TPB and will influence both intention and behavior (Ajzen, 1991; Alalwan et al., 2017). Specifically, it is expected that a consumer who has access to a favorable set of enabling conditions will be more likely to intend to use and actually use technology. Thus, in this research, two hypotheses are proposed regarding this construct:

H10: “Facilitating conditions” have a positive impact on “intention to use.”

H11: “Facilitating conditions” have a positive impact on “usage behavior.”

Similarly to facilitating conditions, Venkatesh et al. (2012) showed that “habit” has a direct effect on the use of technology and intention to use it. In an e-commerce study, Liao, Palvi, and Lin (2006) added habit to the TAM model and found that as consumers developed habitual behaviors with a specific website they were more likely to continue visiting the same website. Venkatesh et al. (2012) added habit to UTAUT2, arguing that unconscious actions and conscious intentions influence behavioral intentions. Chou, Chiu, Ho, and Lee (2013), in turn, defined this construct as the extent to which users automatically use their mobile applications. These relationships are due to the fact that the authors consider habit as something linked to a previous experience that affects both individual decisions and behavior. Therefore, two hypotheses are raised regarding this construct:

H12: “Habit” has a positive impact on “intention to use.”

H13: “Habit” has a positive impact on “usage behavior.”

Based on the 13 hypotheses, the research model presented in Figure 1 was elaborated.

3 Methodological procedures

Given the research objective, the quantitative approach was chosen, in which systematic and objective strategies are used in the study development process. In this

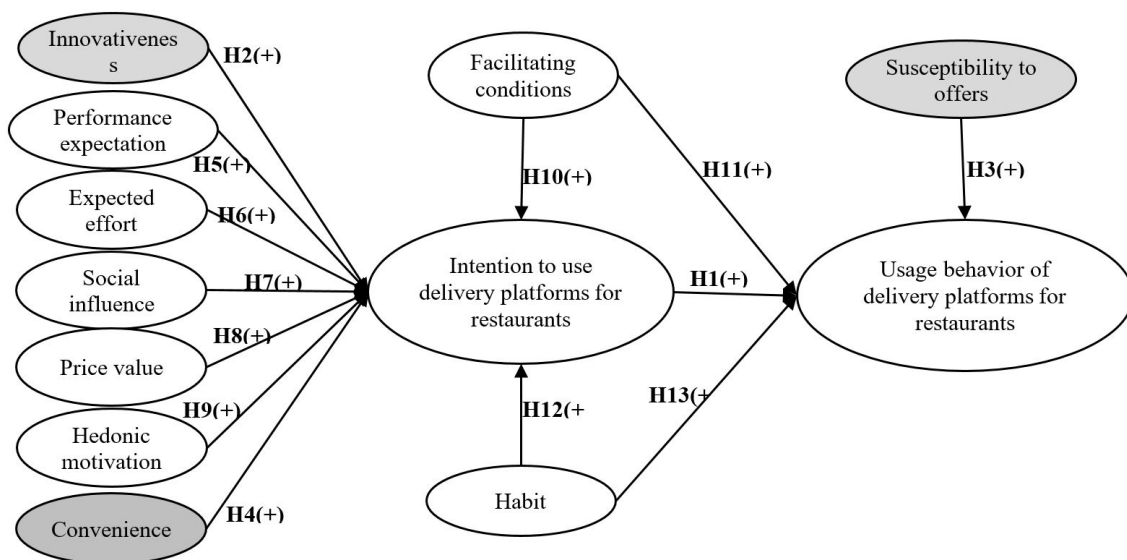


Figure 1 - Research Model and Hypotheses

Note: The constructs not in gray are part of the original UTAUT2 model. Those in gray were added to the model.

research type, all data are collected in a way that enables quantification, and the analysis is based on statistical resources and techniques. Based on the methodological approach proposed in this research, the survey method was used. It is the most appropriate one for this study since it is associated with observation through direct or indirect questions, applied to numerous populations. This method has the advantage of reliability to establish social regularities and the possibility of generalization (Malhotra, Birks, & Nunan, 2017).

The data collection tool used was a formal questionnaire developed by the authors based on scales already validated by Feng (2017), C. Martins, Oliveira, and Popović (2014), Tak and Panwar (2017), and Venkatesh et al. (2012), all adapted to the context of the use of restaurant delivery platform services. This research tool, presented in Appendix A, was structured with questions regarding the constructs and measures using a five-point Likert scale, ranging from 1 (I totally disagree) to 5 (I totally agree). It was necessary to transform the “usage behavior” variable into an interval variable from 1 to 5, to allow the variable frequency to be analyzed in the same way as the other constructs. In addition, questions were prepared to collect socio-demographic data from the respondents, including information on the frequency of use of the services of restaurant food delivery platforms. The layout and the presentation of the questions were

evaluated through a pre-test conducted with a small number of users of restaurant delivery platforms. This test was essential to ensure the high internal consistency of the measurement items.

The sampling process was predetermined. The data were collected in October and November of 2018, when the resulting pre-test questionnaire was applied, structured, standardized, and created using the Google Forms tool. In addition to the dissemination on social networks (Facebook, WhatsApp, and Twitter), the technique called snowball sampling was used. The authors invited their social circle (initial contacts) to answer the questionnaire and send it to four other acquaintances to increase the survey’s reach to users of the services of restaurant delivery platforms. 344 valid answers were obtained from users of restaurant delivery platform services.

4 Data analysis and presentation of results

The data collected were analyzed using the partial least squares (PLS) approach for structural equation modeling (SEM) in SmartPLS 3. PLS is a statistical technique used to test and estimate causal relationships by adopting a combination of statistical data and qualitative causal assumptions (Henseler, Ringle, & Sinkovics, 2009). This technique is based on SEM, which allows

each indicator to vary in how much it contributes to the overall score of the latent variable, thus being preferable to other techniques (Chin, Marcolin, & Newsted, 2003).

SEM with estimation by PLS in the areas of social and behavioral sciences has proven to be an excellent possibility for evaluating relationships between constructs, as it is robust to the lack of multivariate normality (Bido & Silva, 2019). These aspects are highly present in the use of attitude scales.

The PLS-SEM technique is “flexible” and capable of estimating complex models, that is, many variables and many constructs and data that are not adherent to a multivariate normal distribution (Raja Mamat, Mat Saman, Sharif, & Simic, 2016; Ringle, Silva, & Bido, 2014). In this sense, the technique has great “syntony” with the nature of the problems and data from human social relations (Bido & Silva, 2019). The method also focuses on explaining the variance of dependent variables when examining the model and generally does not make assumptions about data distributions (Hair, Hult, Ringle, & Sarstedt, 2017; Hair, Sarstedt, Ringle, & Gudergan, 2018). PLS-SEM fits very well in situations where the theory supporting causal relationships is not yet very “sedimented” and can be used in a more “exploratory” way (Bido & Silva, 2019).

The results analysis follows the two-step approach to evaluate structural equation models recommended by Cardozo, Zanquetto, and Oliveira, (2019), Hair et al. (2017), and Peng and Lai (2012). First, the measurement model was examined to evaluate the reliability of the research instrument and the properties of internal validity.

Second, the structural model was analyzed to test the research hypotheses proposed in this study.

In the next section, the sample profile is presented, and the measurement model and the structural model are examined in sequence.

4.1 Sample description

The first data analyzed refer to the sample description, as presented in Table 1, which highlights all the respondents’ characteristics that may contribute to the understanding of the results. An overview of the usage behavior of delivery platforms for restaurants, detailed by gender, age group, marital status, and family income, is presented in Appendix B.

4.2 Assessment of the measurement model

The measurement model was evaluated using the following criteria: (i) convergent validity; (ii) reliability and internal consistency; and (iii) discriminant validity. Table 2 presents the loads, reliability indicators, average variance extracted, composite reliability, and Cronbach’s alpha. All indicators and constructs meet the values suggested by Hair et al. (2017) and Henseler et al. (2009) (i.e., loads>0.70, reliability indicator and AVE>0.50, in addition to composite reliability >0.60 and Cronbach alpha’s <0.90).

The discriminant validity was analyzed using the Fornell-Larcker and heterotrait- monotrait ratio (HTMT) criteria. Table 3 contains the square root AVE in bold along the diagonal, verifying the condition to be

Table 1
Sample description

| Variable | N. | % | Variable | N. | % |
|------------------|------------|-------------|-----------------------------|------------|-------------|
| Gender | | | Marital status | | |
| Male | 158 | 45.9% | Married | 61 | 17.7% |
| Female | 186 | 54.1% | Divorced | 7 | 2.0% |
| Age group | | | Separated | 2 | 0,6% |
| 18 to 23 years | 127 | 36.9% | Single | 273 | 79.4% |
| 24 to 29 years | 141 | 41.0% | Widower | 1 | 0.3% |
| 30 to 35 years | 35 | 10.2% | Family income | | |
| 36 to 41 years | 20 | 5.8% | R\$1,874.00 | 28 | 8,1% |
| 42 to 47 years | 7 | 2.0% | R\$1,874.01 to R\$3,748.00 | 55 | 16.0% |
| 48 to 53 years | 5 | 1.5% | R\$18,740.01 or more | 62 | 18.0% |
| 54 to 59 years | 7 | 2.0% | R\$3,748.01 to R\$9,370.00 | 130 | 37.8% |
| > 60 years | 2 | 0.6% | R\$9,370.01 to R\$18,740.00 | 69 | 20.1% |
| Σ | 344 | 100% | Σ | 344 | 100% |

Table 2
Convergent validity and reliability and internal consistency

| Construct | Cronbach's alpha | Composite reliability | Average variance extracted | Item | Loading | Standard deviation | T Statistics |
|--------------------------|------------------|-----------------------|----------------------------|------|---------|--------------------|--------------|
| Convenience | 0.778 | 0.846 | 0.523 | CO1 | 0.747 | 0.046 | 19.079 |
| | | | | CO2 | 0.728 | 0.073 | 10.471 |
| | | | | CO4 | 0.701 | 0.028 | 29.846 |
| | | | | CO6 | 0.723 | 0.032 | 25.653 |
| | | | | CO7 | 0.738 | 0.025 | 34.163 |
| Facilitating conditions | 0.700 | 0.804 | 0.673 | FC2 | 0.871 | 0.034 | 24.150 |
| | | | | FC3 | 0.767 | 0.037 | 20.494 |
| Expected effort | 0.857 | 0.903 | 0.700 | EE1 | 0.850 | 0.056 | 12.426 |
| | | | | EE2 | 0.814 | 0.044 | 17.193 |
| | | | | EE3 | 0.867 | 0.057 | 10.890 |
| | | | | EE4 | 0.814 | 0.011 | 79.919 |
| Performance Expectation | 0.723 | 0.804 | 0.578 | PE1 | 0.804 | 0.021 | 39.055 |
| | | | | PE2 | 0.723 | 0.021 | 39.110 |
| | | | | PE3 | 0.752 | 0.014 | 59.708 |
| Habit | 0.875 | 0.912 | 0.722 | HA1 | 0.896 | 0.017 | 52.186 |
| | | | | HA2 | 0.817 | 0.028 | 28.994 |
| | | | | HA3 | 0.822 | 0.011 | 82.367 |
| | | | | HA4 | 0.863 | 0.012 | 74.032 |
| Behavioral intention | 0.833 | 0.900 | 0.749 | BI1 | 0.870 | 0.024 | 34.758 |
| | | | | BI2 | 0.818 | 0.018 | 49.791 |
| | | | | BI3 | 0.906 | 0.021 | 43.335 |
| Innovativeness | 0.868 | 0.918 | 0.789 | IN1 | 0.918 | 0.009 | 101.720 |
| | | | | IN2 | 0.848 | 0.015 | 59.873 |
| | | | | IN3 | 0.897 | 0.029 | 29.377 |
| Social influence | 0.899 | 0.937 | 0.832 | SI1 | 0.892 | 0.014 | 65.877 |
| | | | | SI2 | 0.939 | 0.028 | 29.846 |
| | | | | SI3 | 0.904 | 0.165 | 5.893 |
| Hedonic motivations | 0.814 | 0.888 | 0.726 | HM1 | 0.840 | 0.217 | 3.546 |
| | | | | HM2 | 0.893 | 0.990 | 2.333 |
| | | | | HM3 | 0.821 | 0.044 | 20.521 |
| Susceptibility to offers | 0.755 | 0.869 | 0.771 | SO1 | 0.974 | 0.035 | 26.841 |
| | | | | SO3 | 0.770 | 0.025 | 38.367 |
| Usage behavior | NA | NA | NA | USB | 1.000 | 0.000 | |
| Price value | 0.818 | 0.947 | 0.857 | PV1 | 0.905 | 0.846 | 21.455 |
| | | | | PV2 | 0.931 | 0.768 | 10.298 |
| | | | | PV3 | 0.941 | 0.876 | 112.772 |

greater than the correlation between constructs (Fornell & Larcker, 1981). It can be observed that the values in the diagonals of Table 3 are higher than their correlations with other variables, providing evidence that discriminant validity is established.

As shown in Table 3, each item presents a higher load in its corresponding factor than the cross loading in other factors (Chin, 1998).

In order to test the discriminant validity, the heterotrait-monotrait ratio (HTMT) was applied. HTMT

is the average of the heterotrait-heteromethod correlations (indicator correlations between the constructs that measure different phenomena) over the average of the monotrait-heteromethod correlations (indicator correlations within the same construct). The HTMT should be significantly lower than one (ideally < 0.85) to highlight the distinction between two factors (Henseler, Hubona, & Ray, 2016; Henseler, Ringle, & Sarstedt, 2015).

In this survey, the HTMT ratios for each pair are < 0.85 (see Table 4), indicating that all constructs

Table 3
Fornell-Larcker Criterion

| Construct | USB | FC | PE | EE | HA | SI | IN | BI | HM | CO | SO | PV |
|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| USB | 1.000 | | | | | | | | | | | |
| FC | 0.004 | 0.820 | | | | | | | | | | |
| PE | -0.031 | 0.305 | 0.760 | | | | | | | | | |
| EE | -0.074 | 0.586 | 0.343 | 0.837 | | | | | | | | |
| HA | 0.037 | 0.287 | 0.425 | 0.344 | 0.850 | | | | | | | |
| SI | 0.109 | 0.221 | 0.428 | 0.163 | 0.395 | 0.912 | | | | | | |
| IN | 0.063 | 0.234 | 0.201 | 0.241 | 0.415 | 0.208 | 0.888 | | | | | |
| BI | -0.041 | 0.364 | 0.514 | 0.392 | 0.714 | 0.330 | 0.307 | 0.866 | | | | |
| HM | -0.058 | 0.271 | 0.502 | 0.347 | 0.430 | 0.375 | 0.276 | 0.418 | 0.852 | | | |
| CO | 0.018 | 0.160 | 0.300 | 0.198 | 0.344 | 0.281 | 0.345 | 0.263 | 0.358 | 0.723 | | |
| SO | 0.106 | 0.212 | 0.291 | 0.199 | 0.304 | 0.279 | 0.374 | 0.276 | 0.320 | 0.323 | 0.878 | |
| PV | 0.038 | 0.063 | 0.064 | 0.067 | 0.195 | 0.220 | 0.123 | 0.160 | 0.229 | 0.211 | 0.057 | 0.926 |

Source: Smart PLS Software

Note: USB - Usage behavior, FC - Facilitating conditions, EP - Performance expectations, EE - Expected effort, HA - Habit, SI - Social influence, IN - Innovativeness, BI - Behavioral intention, MH - Hedonic motivations, CO - Convenience, SO - Susceptibility to offers, and PV - Price value.

Table 4
Heterotrait - Monotrait Ratio (HTMT) Criterion

| Construct | USB | FC | PE | EE | HA | SI | IN | BI | HM | CO | SO | PV |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----|
| USB | - | | | | | | | | | | | |
| FC | 0.014 | - | | | | | | | | | | |
| PE | 0.038 | 0.528 | - | | | | | | | | | |
| EE | 0.079 | 0.864 | 0.454 | - | | | | | | | | |
| HA | 0.040 | 0.391 | 0.549 | 0.376 | - | | | | | | | |
| SI | 0.116 | 0.327 | 0.555 | 0.188 | 0.452 | - | | | | | | |
| IN | 0.072 | 0.353 | 0.266 | 0.275 | 0.467 | 0.230 | - | | | | | |
| BI | 0.044 | 0.548 | 0.673 | 0.463 | 0.800 | 0.379 | 0.358 | - | | | | |
| HM | 0.066 | 0.424 | 0.691 | 0.400 | 0.515 | 0.439 | 0.325 | 0.494 | - | | | |
| CO | 0.031 | 0.239 | 0.406 | 0.237 | 0.423 | 0.330 | 0.401 | 0.306 | 0.458 | - | | |
| SO | 0.102 | 0.378 | 0.396 | 0.267 | 0.363 | 0.322 | 0.467 | 0.336 | 0.392 | 0.430 | - | |
| PV | 0.039 | 0.095 | 0.085 | 0.087 | 0.231 | 0.241 | 0.143 | 0.182 | 0.278 | 0.263 | 0.072 | - |

Note: USB - Usage behavior, FC - Facilitating conditions, PE - Performance expectation, EE - Expected effort, HA - Habit, SI - Social influence, IN - Innovativeness, BI - Behavioral intention, HM - Hedonic motivations, CO - Convenience, SO - Susceptibility to offers, and VP - Price value.

are explicitly independent of each other and that the discriminant validity criterion is met.

All the constructs analyzed to meet the criterion are shown in Table 4.

Both the Fornell-Larcker and heterotrait-monotrait ratio (HTMT) criteria were met, providing evidence of scale validity. The results indicate that the model has a good convergent validity level, reliability, and internal consistency and discriminant validity. This ensures that the constructs are statistically distinct and can be used to test the structural model.

4.3 Structural model and hypothesis testing

After the measurement model evaluation process, the structural model was evaluated, examining the predictive capacity of the model and the relationships between the constructs (Hair et al., 2017; Peng & Lai, 2012).

Before evaluating the structural model, multicollinearity should be examined according to the variance inflation factor (VIF) tolerance value. According to Cohen, Cohen, West, and Aiken (2013), $VIF > \text{or} =$

4.00 is considered indicative of noncollinearity between the constructs of the same set, a criterion met for all constructs.

To demonstrate the predictive validity of the research model, the variance explained (R²) was used, which is a central criterion for evaluating the structural model, as suggested by Henseler et al. (2014). The exogenous variables explained 64.9% of the variance in the intention to use delivery platforms for restaurants and 29.7% of the usage behavior of these platforms. These values suggest good predictive and explanatory power of the model. In addition, the general fit was evaluated using the root mean square error (RMSE) of the standardized residuals. It is reported that indices lower than 0.10 are indicative of a good fit (Hair, Black, Babin, Anderson, & Tatham, 2009; Kline, 2015). Therefore, the RMSE of the research model here of 0.059 indicates a good fit of the model.

Next, the significance and relevance of the relationships in the structural model were evaluated. The analysis of the relationships of the hypotheses and constructs was performed based on the examination of standardized paths. The path significance and level of

significance were estimated using bootstrap resampling (Henseler et al., 2009), with 5000 resampling iterations (Chin, 1998).

Table 5 presents the path coefficients between the constructs and their respective significance levels, generated after applying the PLS algorithm. To identify the significance of a coefficient, we used the value of the T-test, which should be equal to or higher than 2.58, 1.96, and 1.57 for a significance level of 1%, 5%, and 10%, respectively (Hair et al., 2017; Tortosa, Moliner, & Sánchez, 2009).

Finally, based on the data analysis, the structural model is presented, which indicates the values of the constructs and their impact on the intention to use and usage behavior of delivery platforms for restaurants (Figure 2).

4.4 Discussion of results

The theoretical model analyzed in this research presents factors that can improve the performance of apps if properly used by organizations and gain potential customers using this means of consumption. From a total

Table 5
Path coefficients between the constructs and their levels of significance

| | Path | β | Standard deviation | T Statistics | P Value | Level of Significance | Result |
|-----|---|---------|--------------------|--------------|---------|-----------------------|---------------|
| H1 | Intention to use -> Usage behavior | 0.152 | 0.073 | 2.075 | 0.038 | ** | Supported |
| H2 | Innovativeness -> Intention to use | 0.009 | 0.045 | 2.236 | 0.025 | ** | Supported |
| H3 | Susceptibility to offers -> Usage behavior | 0.114 | 0.063 | 1.999 | 0.072 | *** | Supported |
| H4 | Convenience -> Intention to use | 0.036 | 0.04 | 2.070 | 0.039 | ** | Supported |
| H5 | Performance expectation -> Intended Use | 0.229 | 0.05 | 4.562 | 0.000 | * | Supported |
| H6 | Expected effort -> Intention to use | 0.059 | 0.052 | 2.547 | 0.011 | ** | Supported |
| H7 | Social influence -> Intention to use | -0.034 | 0.049 | 0.702 | 0.482 | NS | Not Supported |
| H8 | Price value -> Intention to use | 0.032 | 0.039 | 2.400 | 0.016 | ** | Supported |
| H9 | Hedonic motivations -> Intention to use | 0.027 | 0.048 | 0.572 | 0.567 | NS | Not Supported |
| H10 | Facilitating conditions -> Intention to use | 0.099 | 0.048 | 2.047 | 0.041 | ** | Supported |
| H11 | Facilitating conditions -> Usage behavior | 0.004 | 0.059 | 0.067 | 0.946 | NS | Not Supported |
| H12 | Habit -> Intention to use | 0.580 | 0.044 | 13.095 | 0.000 | * | Supported |
| H13 | Habit -> Usage behavior | 0.110 | 0.076 | 2.158 | 0.031 | ** | Supported |

Note: NS - Not significant, *P<=0.001; **P<=0.05, and ***P<=0.10.



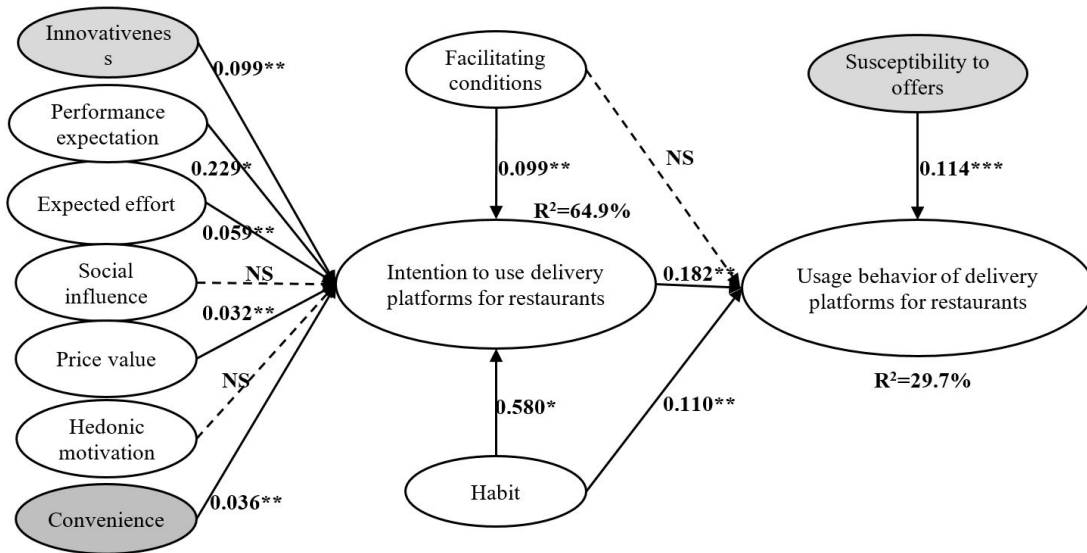


Figure 2 - Structural Model Result

Note: * $P \leq 0.001$; ** $P \leq 0.05$; and *** $P \leq 0.10$. Statistically significant relationships are indicated with a solid arrow, while non-significant correlations are marked with a dashed arrow.

of 13 hypotheses analyzed that represent the factors that have an impact on intention or behavior, only three were not supported by the data obtained.

Among the supported hypotheses, it can be observed that, if compared to other constructs, habit has a great influence on intention to use (hypothesis H12: $\beta = 0.580$; p-value < 0.001) and a high impact on usage behavior (hypothesis H13: $\beta = 0.110$; p-value < 0.05). This means that the use of apps has become a practice for the respondents, and the usage behavior of these media has already been learned (Limayem, Khalifa, & Frini, 2000; Venkatesh et al., 2012). This result also comes close to confirming hypothesis H10 (“facilitating conditions” have a positive impact on “intention to use”). The respondents confirmed that they have the knowledge necessary to use delivery apps for restaurants and that the way to manipulate these apps is similar to other platforms that they are already used to using on their mobile phones (Bharati & Srikanth, 2018; Venkatesh et al., 2012). In addition, hypothesis H6 (“expected effort” has a positive impact on “intention to use”) is also confirmed, i.e., the ease of using the apps was also accepted, which contributes to the facilitating conditions and habit (Alalwan et al., 2017; Davis, 1989; Venkatesh et al., 2012).

Through these results, there is theoretical validation of the propositions previously established in the literature.

Another factor that has a strong impact on intention to use is performance expectation (Hypothesis H5: $\beta = 0.229$; p-value < 0.001), which confirms that the apps investigated represent benefits to consumers in the execution of their activities. Thus, the results reinforce the theory and, managerially, point to the approval of the current business model by the customers who responded to the survey.

Convenience (S. Balasubramanian, Peterson, & Jarvenpaa, 2002) and price value (Venkatesh et al., 2012), in turn, were relevant antecedents of the intention to use the apps, since the hypotheses (H4 and H8) regarding these constructs were supported. Both constructs measured a certain type of perceived value. In the case of price value, the affirmations were related to a good cost-benefit perception. At the same time, the confirmation of convenience as an antecedent of intention to use indicates that factors (such as ease of use, speed of delivery, a wide range of restaurant options, constant promotions, good prices, good coverage, and efficient support) are attributes valued by the respondents and, as such, should be considered by the managers of this segment. Theoretically, the model confirms that the inclusion of this new construct made sense in adapting the original model to the chosen research object. It is important to note that in the paper of Ray, Dhir, Bala, and Kaur (2019), convenience was tested as an antecedent

of intention to use and was not statistically significant. Still, despite having the same name, the two constructs measure different things, since each construct's variables are different, a point that always warrants highlighting to avoid problems of interpretation in future studies. Regarding innovativeness (H2), which had an impact on intention to use, there is evidence that users of these apps are receptive to new ideas and are willing to experiment with new practices and brands (Feng, 2017; Kessler & Martin, 2017; Tak & Panwar, 2017). Innovation is an important psychological characteristic of the adoption of new technologies. Rogers (2003) indicates that for an innovative product or service to be accepted successfully, it is essential that innovators (2.5% of the target audience) and early adopters (13.5% of the target audience) approve, use, and speak well of innovation. Only after that can it reach the majority of potential consumers (68% of the target audience, equally divided between early and late majority). Thus, ensuring a positive experience of these early adopters is vital for the service to continue to grow.

To create a positive experience, it is necessary to observe some particularities of consumer behavior. As noted by Lu et al. (2005), innovation creates uncertainty about the expected consequences for potential adopters. Individuals usually feel uncomfortable with uncertainty and tend to interact with social networks to decide on adoption, which corresponds to the social influence construct. However, as in the studies of Alalwan et al. (2018), Christino et al. (2019), and Lu et al. (2005), in this research, social influence (H7) does not have an impact on intention to use. Therefore, it is believed that most adopters are more likely to base their adoption intentions on their perceptions of the app, rather than blindly following the fashion or just the opinion of people in their social environment.

Another way to create good experiences for the consumer concerns the influence of susceptibility to offers on the usage behavior of delivery applications (H3), a hypothesis supported in this survey. This means that offers represent attractive continuity of use of the apps (Ray et al., 2019, Tak & Panwar, 2017). One of the offers provided to consumers may be related to the reduction of the financial value of the product (Cho et al., 2019), since the price value construct has an impact on the intention to use the app. Other types of promotions could be raised in future surveys. Also, regarding the respondents' peculiarities, the surveyed sample does not use food delivery applications for entertainment, an aspect

that is measured in the hedonic motivation (H9) construct as an antecedent to intention to use. This result indicates that there is a more functional appreciation on the part of the users, which at first may generate some surprise, since the product delivered (food) is often strongly related to pleasure. However, more research would be needed to assess whether the use of apps is disconnected from the meals themselves. In other studies, such as those of Oechslein, Fleischmann, and Hess (2014) and Christino, Silva, Cardozo, and Lopes, (2018), hedonic motivation was also not confirmed. Future studies could try to map which categories of products and services are more susceptible to this in terms of intention to use.

Finally, it should be noted that facilitating conditions did not have an impact on the frequency of use, only the behavioral intention. These results are similar to those of Joo, Joung, Shin, Lim, and Choi (2014) and Bharati and Srikanth (2018) and contradictory to the results of the original UTAUT2 (Moura, Gosling, Christino, & Macedo, 2017; Venkatesh et al., 2012).

The use of apps probably involves other aspects that go beyond those investigated in this construct, so future research could seek other predictors capable of explaining the frequency of use besides facilitating conditions, behavioral intention, habit, and susceptibility to offers.

5 Conclusion

This study sought to analyze the factors that influence the intention to use and usage behavior of delivery applications for restaurants, using the extended UTAUT2 model as a theoretical basis. The proposition made explained 64.9% of the interviewees' "intention to use" delivery applications. The antecedents, presented here in order of predictive importance are: "habit," "performance expectation," "facilitating conditions," "innovativeness," "expected effort" "convenience," and "price value". The "social influence" and "hedonic motivation" antecedents were not statistically significant. Concerning the "usage behavior" construct, the proposed model was able to explain 29.7% of its variation through the "intention to use," "susceptibility to offers," and "habit" constructs (in this order of predictive importance), and the "facilitating conditions" construct was not statistically significant. These results provide theoretical and managerial contributions.

Theoretically, the original UTAUT2 model was expanded with the addition of two antecedents of the intention to use restaurant delivery applications: (i)

innovation, as studied by Feng (2017); and (ii) convenience, explored by Yeo et al. (2017). A specific history of actual use was also added, i.e., susceptibility to offers, based on Feng (2017) and Tak and Panwar (2017). By proposing and validating these three constructs, this study is useful to evaluate other apps, technologies, or products in future research related to the adoption of new technologies. This article also specifically contributes to the literature related to theories and models of technology adoption that recommend expansion to new contexts (Bagozzi, 2007; Venkatesh, Davis, & Morris, 2007; Venkatesh et al., 2012), and new cultural scenarios (Brazilian scenario), which is considered a critical step to advance a theory (Alvesson & Kärreman, 2007). Finally, specific theoretical contributions regarding the studied phenomenon, which is growing in several countries, have shown it to be a disruptive business model, lacking a greater understanding of its consumers (Ray et al., 2019).

Managerially, the study's findings may be relevant for managers of the ecosystem of companies involved, since, to a certain extent, they may improve the level of understanding about the background that influences users' behavior concerning intention to use and actual use. Among the antecedents, the results regarding "habit" indicate that this construct should continue to be worked on, with both users and non-users, in order to maintain and/or increase the customer base. In this sense, some interesting management literature is that of Eyal (2014), which proposes a model that enhances the creation of habits of use of smartphone applications. Another construct, "performance expectation," indicates to managers and developers that the business model has value as perceived by users, thus validating the current model. The "facilitating conditions" and "innovativeness" constructs indicate that it is necessary to have a certain level of technical skills to become a user of this type of application, which suggests that the transmission of information and training to non-users should be intensified to accelerate the obtainment of new customers. The "expected effort" construct, in turn, shows that the feeling of security in using the apps is an important antecedent of the intention to use, which reinforces the need to ensure positive user experiences with the platforms. Experiments with users could be a source of information that helps in this. "Convenience" is a construct that highlights some attributes that should continue to be managed, such as usability, speed of delivery, the mix of restaurants, promotions, coverage, and support. In the same vein, it is also important to

continue fostering a good perception of the "price value" variables. It is important to monitor references such as the fees charged by competitors and the monetary value of substitute services as they are used by consumers to form their perceptions of cost-benefit. This consideration of price reinforces the need to constantly monitor the movements of these players.

5.1 Limitations and suggestions for future research

While this research provides relevant insights into food delivery apps and validated the UTAUT2 model to evaluate this type of service, it also contains some limitations. First, the data were obtained from a convenience sample of users from only one socioeconomic context, i.e. Brazil, which may reflect negatively on the generalization of the results to other countries. Thus, we suggest that the model proposed in this research be explored in different contexts in future studies.

Another research limitation is that although the intention to use the service of the delivery platforms for restaurants is explained in large part ($R^2 = 64.9\%$) by the exogenous variables, the usage behavior of the delivery platforms for restaurants is only moderately explained ($R^2 = 29.7\%$) from the conceptual point of view. Thus, it is important to continue the investigations to identify which other variables can be added to the current model in order to improve its explanatory power.

As a suggestion for future research, as the nature of this study is cross-sectional, a longitudinal analysis is suggested to discover how customers' experiences, perceptions, and satisfaction adapt over time with these apps. The following are also recommended: (i) the influence that a promotion has on consumer behavior should be a better-explored construct in future studies; (ii) the intention to continue using these applications should also be monitored; and (iii) the primary triggers and rewards related to brand loyalty to specific food delivery applications should be investigated.

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Appendix A**Measurement items and source**

| Construct | | Items | Source |
|--------------------------|------|--|---------------------------|
| Performance expectation | PE1 | I find it useful to use delivery applications for restaurants. | Venkatesh, et al. (2012) |
| | PE2 | Using delivery applications for restaurants increases my options. | |
| | PE3 | Using delivery applications for restaurants allows me to eat what I like more easily. | |
| | *PE4 | Using delivery applications for restaurants allows me to choose meals more quickly. | |
| Expected effort | EE1 | Learning how to use delivery applications for restaurants is easy. | Venkatesh, et. al. (2012) |
| | EE2 | Interacting with restaurant delivery applications is simple and easy to understand. | |
| | EE3 | I find it easy to use restaurant delivery applications. | |
| | EE4 | It's easy for me to become skilled in using restaurant delivery applications. | |
| Social influence | SI1 | Important people for me think that I should use restaurant delivery applications. | Venkatesh, et. al. (2012) |
| | SI2 | People I relate to think I should use restaurant delivery apps. | |
| | SI3 | People whose opinions I value prefer me to use restaurant delivery apps. | |
| Facilitating conditions | *FC1 | I have the resources (smartphone, internet access, payment methods) to use restaurant delivery apps. | Venkatesh, et al. (2012) |
| | FC2 | I have the necessary knowledge to use restaurant delivery apps. | |
| | FC3 | The way I use restaurant delivery apps is similar to other platforms that I use on my phone. | |
| | *FC4 | I can get help from others when I have difficulties using the restaurant delivery applications. | |
| Hedonic motivations | HM1 | Using restaurant delivery apps is fun. | Venkatesh, et al. (2012) |
| | HM2 | Using restaurant delivery apps is nice. | |
| | HM3 | Using restaurant delivery apps is very interesting. | |
| Price value | PV1 | Restaurant delivery apps are reasonably priced. | Venkatesh, et al. (2012) |
| | PV2 | The delivery cost of restaurant delivery applications is very cost-effective. | |
| | PV3 | At current delivery rates, restaurant delivery applications offer good value. | |
| Habit | HA1 | The use of restaurant delivery applications has become a habit for me. | Venkatesh, et al. (2012) |
| | HA2 | I am addicted to using restaurant delivery applications. | |
| | HA3 | I need to use restaurant delivery applications. | |
| | HA4 | Using restaurant delivery apps has become natural for me. | |
| Behavioral intention | BI1 | I intend to continue using restaurant delivery applications in the future. | Venkatesh, et al. (2012) |
| | BI2 | I will always try to use restaurant delivery apps when I want to order food at home. | |
| | BI3 | I plan on continuing to use delivery applications for restaurants frequently. | |
| Susceptibility to offers | SO1 | Redeeming coupons and/or taking advantage of promotional offers on restaurant delivery apps makes me feel good. | Feng (2017) |
| | *SO2 | I am more biased towards buying or becoming a customer of restaurant delivery apps that offer promotions. | |
| | SO3 | Aside from the money I save, redeeming coupons and taking advantage of promotional offers on restaurant delivery apps makes me very happy. | |
| Innovativeness | IN1 | If I hear about new technology, I try it. | Tak and Panwar (2017) |
| | IN2 | Within my social circle, I'm usually the first to try out new technologies. | |
| | IN3 | I like to try out new technologies. | |
| | *IN4 | In general, I am hesitant to try new technologies. | |

Note: *The respective indicator was excluded because it does not present statistical significance and relevance.

Appendix A Continued...

| Construct | Items | Source |
|----------------|--|---------------------------|
| Convenience | CO1 I prefer the application I use because it's the easiest to manipulate. | Experts |
| | CO2 I prefer the app I use because delivery is quicker. | |
| | *CO3 I prefer the app I use because it is the only one with my favorite restaurant(s). | |
| | CO4 I prefer the app I use because it offers the best promotions. | |
| | *CO5 I prefer the app I use because delivery is cheaper. | |
| | CO6 I prefer the app I use because it has the best coverage. | |
| | CO7 I prefer the app I use because it offers the best customer support. | |
| Usage behavior | USB Once a month (1). | C. Martins, et al. (2014) |
| | Once a week (2). | |
| | Once every 2 or 3 days (3). | |
| | Every day (4). | |
| | Several times a day (5). | |

Note: *The respective indicator was excluded because it does not present statistical significance and relevance.

Appendix B Overview of the Usage Behavior of Delivery Platforms for Restaurants

| Variable | N. | % | Variable | N. | % |
|---------------------------------------|----|-------|---------------------------------------|----|-------|
| Male Gender | | | Gender Female | | |
| Once a month (1). | 14 | 8.9% | Once a month (1). | 9 | 4.8% |
| Once a week (2). | 37 | 23.4% | Once a week (2). | 43 | 23.1% |
| Once every 2 or 3 days (3). | 43 | 27.2% | Once every 2 or 3 days (3). | 57 | 30.6% |
| Every day (4). | 52 | 32.9% | Every day (4). | 60 | 32.3% |
| Several times a day (5). | 12 | 7.6% | Several times a day (5). | 17 | 9.1% |
| Age group - 18 to 23 years old | | | Age group - 24 to 29 years old | | |
| Once a month (1). | 10 | 7.9% | Once a month (1). | 3 | 2.1% |
| Once a week (2). | 8 | 6.3% | Once a week (2). | 15 | 10.6% |
| Once every 2 or 3 days (3). | 55 | 43.3% | Once every 2 or 3 days (3). | 54 | 38.3% |
| Every day (4). | 41 | 32.3% | Every day (4). | 64 | 45.4% |
| Several times a day (5). | 13 | 10.2% | Several times a day (5). | 5 | 3.5% |
| Age group - 30 to 35 years old | | | Age group - 36 to 41 years old | | |
| Once a month (1). | 2 | 5.7% | Once a month (1). | 2 | 10.0% |
| Once a week (2). | 9 | 25.7% | Once a week (2). | 8 | 40.0% |
| Once every 2 or 3 days (3). | 16 | 45.7% | Once every 2 or 3 days (3). | 6 | 30.0% |
| Every day (4). | 6 | 17.1% | Every day (4). | 4 | 20.0% |
| Several times a day (5). | 2 | 5.7% | Several times a day (5). | 0 | 0.0% |
| Age group - 42 to 47 years old | | | Age group - 48 to 53 years old | | |
| Once a month (1). | 2 | 28.6% | Once a month (1). | 1 | 20.0% |
| Once a week (2). | 3 | 42.9% | Once a week (2). | 2 | 40.0% |
| Once every 2 or 3 days (3). | 1 | 14.3% | Once every 2 or 3 days (3). | 1 | 20.0% |
| Every day (4). | 1 | 14.3% | Every day (4). | 1 | 20.0% |
| Several times a day (5). | 0 | 0.0% | Several times a day (5). | 0 | 0.0% |
| Age group - 54 to 59 years old | | | Age group - > 60 years | | |
| Once a month (1). | 2 | 28.6% | Once a month (1). | 1 | 50.0% |
| Once a week (2). | 3 | 42.9% | Once a week (2). | 1 | 50.0% |
| Once every 2 or 3 days (3). | 2 | 28.6% | Once every 2 or 3 days (3). | 0 | 0.0% |
| Every day (4). | 0 | 0.0% | Every day (4). | 0 | 0.0% |
| Several times a day (5). | 0 | 0.0% | Several times a day (5). | 0 | 0.0% |
| Marital status - Married | | | Marital Status - Divorced | | |
| Once a month (1). | 2 | 3.3% | Once a month (1). | 1 | 14.3% |

Appendix B

Continued...

| Variable | N. | % | Variable | N. | % |
|---|----|--------|--|-----|-------|
| Once a week (2). | 13 | 21.3% | Once a week (2). | 2 | 28.6% |
| Once every 2 or 3 days (3). | 19 | 31.1% | Once every 2 or 3 days (3). | 3 | 42.9% |
| Every day (4). | 25 | 41.0% | Every day (4). | 1 | 14.3% |
| Several times a day (5). | 2 | 3.3% | Several times a day (5). | 0 | 0.0% |
| Civil Status - Separated | | | Marital status - Single | | |
| Once a month (1). | 0 | 0.0% | Once a month (1). | 18 | 6.6% |
| Once a week (2). | 0 | 0.0% | Once a week (2). | 107 | 39.2% |
| Once every 2 or 3 days (3). | 2 | 100.0% | Once every 2 or 3 days (3). | 61 | 22.3% |
| Every day (4). | 0 | 0.0% | Every day (4). | 48 | 17.6% |
| Several times a day (5). | 0 | 0.0% | Several times a day (5). | 29 | 10.6% |
| Marital status - Widow(er) | | | Family income - up to R\$1.874.00 | | |
| Once a month (1). | 1 | 100.0% | Once a month (1). | 2 | 7.1% |
| Once a week (2). | 0 | 0.0% | Once a week (2). | 6 | 21.4% |
| Once every 2 or 3 days (3). | 0 | 0.0% | Once every 2 or 3 days (3). | 15 | 53.6% |
| Every day (4). | 0 | 0.0% | Every day (4). | 3 | 10.7% |
| Several times a day (5). | 0 | 0.0% | Several times a day (5). | 2 | 7.1% |
| Family income - R\$1,874.01 to R\$3,748.00 | | | Family income - R\$18,740.01 or more | | |
| Once a month (1). | 2 | 3.6% | Once a month (1). | 3 | 4.8% |
| Once a week (2). | 11 | 20.0% | Once a week (2). | 9 | 14.5% |
| Once every 2 or 3 days (3). | 16 | 29.1% | Once every 2 or 3 days (3). | 19 | 30.6% |
| Every day (4). | 20 | 36.4% | Every day (4). | 27 | 43.5% |
| Several times a day (5). | 6 | 10.9% | Several times a day (5). | 4 | 6.5% |
| Family income - R\$3,748.01 to R\$9,370.00 | | | Family income - R\$9,370.01 to R\$18,740.00 | | |
| Once a month (1). | 15 | 11.5% | Once a month (1). | 6 | 8.7% |
| Once a week (2). | 11 | 8.5% | Once a week (2). | 18 | 26.1% |
| Once every 2 or 3 days (3). | 58 | 44.6% | Once every 2 or 3 days (3). | 31 | 44.9% |
| Every day (4). | 43 | 33.1% | Every day (4). | 13 | 18.8% |
| Several times a day (5). | 3 | 2.3% | Several times a day (5). | 1 | 1.4% |

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3. Renata Petrin: Theoretical foundation/ Literature review; Manuscript Writing;

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