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The impact of food delivery applications on Romanian consumers' behaviour during the COVID-19 pandemic

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ABSTRACT

The main purpose of this study is to assess the impact that food delivery mobile applications have on consumers' behaviour in the context of the changes generated by the COVID-19 pandemic. Thus, we aimed to bridge the gap in the literature and practice by studying intrinsic and extrinsic variables that affect 18–50+ years old consumers' decision process. The data set was analysed using the Structural Equation Modelling Part Least Square model because this model has no limitations to integrating more variables into a path model. From a managerial perspective, our results show that food delivery companies should implement customer loyalty strategies, as the users' perceived risk of changing the online food supplier is high. The high degree of visibility of the food delivery applications is positively reflected in the consumers' empathy level and loyalty. Consumer loyalty is also based on the pricing strategy and time saving associated with using this type of applications. The safety value and accessibility represent both consumers' and organisations' priorities that underline the importance of the strategies of reducing the perceived risks during the COVID-19 pandemic. Our research offers to researchers and practitioners a starting point for their future activities. It can help them make decisions considering both periods (during a crisis as generated by pandemic crisis and post-crisis as new normality).

1. Introduction

The COVID-19 pandemic has fundamentally disrupted specific markets, especially the online food ordering space, as people are set to become precautions and even circumspect if they decide to continue placing a food order. This industry has its challenges shaped by the continuous development of technology, the dynamic and competitive environment, and the changes in the consumers' behaviour and preferences. The pandemic added to these challenges the safety concern. Dsouza and Sharma [1] considered that safety measures have now started to influence consumers' loyalty.

The market players who foresaw this and acted proactively will maintain their business proposition and create a positive image of the brand in the consumers' mental framework, thus keeping themselves relevant in the post-COVID-19 era [1].

The value of consumer perception is critical in businesses, especially for marketing. Not only is it critical for the survival and growth of the business, but it is also an essential tool to diagnose competitive advantage [2]. The Consumer Decision Process is impacted by the particularities of many factors, such as the mobile network information [3], the application features [4], the perception of the service quality, and the consumers' intention to use mobile services [5].

Lee et al. [6] extended the UTAUT2 model (Unified Theory of Acceptance and Use of Technology) to show that habit, performance expectancy, and social influence affect continuation intentions towards Food Delivery Apps (FDAs). A recent study realized by Alcantara-Pilar et al. [7] underlines the impact of cultural values (individualism and uncertainty avoidance) on Consumer Decision Process (CDP) as a complex process led by perceived risk, attitudes toward the website, and behavioural intentions in online services. They started from the hypotheses that the relationship between perceived online risk and the attitude toward the website is negative, and the relationship between attitude toward the website and behavioural intention toward the service offered on the website is favourable. Finally, they concluded that the users' final decision is related to the visibility and accessibility of the information on the website. CDP refers to the consumer decision making process and the numerous variables that can influence consumer behaviour. Our research analyses the impact of variables such as: the use of FDAs, consumer loyalty, accessibility, prestige value, risk assessment, empathy, and visibility on CDP; variables which are also considered by

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other studies in the literature. Because of the internet-led business space, major metropolitan and urban centres have been the epicentre of growth, with the online food ordering industry receiving increasing funding resources over the last five years [8].

We have concluded that few studies have focused on consumer behaviour toward online food delivery services (OFDs) in general and FDAs in particular. Topics covered in the existing literature include many subjects:

- The influence of value systems on the decision to order from online to offline (O2O) food delivery services [9].
- The impact of e-service and food quality on consumer loyalty toward OFDs [10].
- The effect of drone food delivery on intentions [11].
- The influence of traffic conditions on significant performance indicators of OFDs [12].
- Evolutionary food quality [13].

In the case of OFDs, the prior literature has contended that consumers' motivation to use these services is driven not only by convenience [14] but also by consumption values [15], which are both utilitarian and hedonic [16]. Broadly, the current literature has acknowledged the usefulness of consumption values in understanding consumer behaviour in the areas of hospitality and tourism [17,18].

Our research aims to analyse the way FDAs influenced the consumers' behaviour during the COVID-19 pandemic in Romania. The study's findings are helpful for the companies working in this industry because they can shape their marketing strategies following the changes in people's buying behaviour during these times of crisis. While there is no specific provision or legislation concerning the online ordering and food delivery process in Romania, we consider there is an opportunity for food companies to develop their digital capabilities. The digitization of SMEs is a stated priority for Romanian authorities, and financial support is directed from the Romanian Government and the European Union towards this area [19]. The present research's objective is to identify the relationships between the variables analysed, thus offering a starting point for the companies to develop their activities in the online food ordering industry.

2. Literature review

Managers and markets have attempted to utilize the online to offline (O2O) business model, which means to attract more online browsers to their offline physical stores by providing better shopping environments equipped with convenience, a user-friendly design, and a vast variety of products and service choices [20]. The online food industry has grown at an incredible pace worldwide due to the convenience, cost, and variety of cuisines available at a single touch.

The European market is expected to grow the fastest at a compounded annual growth rate (CAGR) of 14.5% to reach $32.37bn. North America would mature earlier than other regions, growing at a CAGR of 11% to reach $41bn. Uber Eats accounts for 1.8% of the global online food delivery services, with revenue of almost $1.46bn in 2018 and more than 800 million deliveries [21]. However, Chinese delivery companies, MeituanDianping and Ele.me, dominate the global landscape in annual deliveries with 6.39 bn and 3.28 bn deliveries, respectively, because of China's enormous economically advanced population [21,22].

FDAs enable consumers to search for and order food online to consume later in an offline location [23]. They help users conveniently see listed restaurants, menus, and ratings, finalize, and confirm orders via online payment, and track order statuses with no physical or telephonic interaction with restaurants. Mobile applications are an alternative strategy to restaurants and food delivery services to increase sales revenue and for consumers to conveniently receive products and services.

2.1. Research variables and hypotheses development

Our research includes the following variables, which have been documented in recent studies in this domain: CDP, FDAs, consumer loyalty, prestige value, risk assessment, accessibility, safety value, visibility, and empathy.

In a study linking the attributes of food-aggregator apps with consumers' purchase decisions, Kapoor and Vij [24] examined four attributes: visual, navigational, information, and collaboration design. FDAs should work on ways to accelerate food delivery and control delivery-related costs. Food delivery through drones, tested in Korea [11], can help FDAs evade traffic congestion.

Consumer loyalty is described as the future propensity to stay with the service provider [25]. Uncles et al. [26] describe three conceptualizations: loyalty as primarily an attitude that sometimes leads to a relationship with the brand; loyalty expressed in terms of revealed behaviour; and buying moderated by the individual's characteristics, circumstances, and/or the purchase situation. The anchor points are Customer Brand Commitment (CBC) and Customer Brand Buying (CBB), with Customer Brand Acceptance (CBA) occupying the densely populated middle ground. CBA customers exhibit loyalty to several brands because there is little reason to develop exclusive attitudinal loyalty to any brands purchased.

CBC customers value psychological and social value more than function. Consumers have a consistently favourable set of stated beliefs towards the brand purchased. CBB consumers exhibit very low levels of loyalty. Their choices are shaped by considerations of immediate availability, price, and promotions [26].

Therefore, considering that FDAs should work on ways to improve the CDP, we developed the following hypothesis:

Hypothesis 1. Food delivery directly and positively influences Consumer Decision Process.

Pee et al. [27] explain that online businesses must have loyal consumers while proposing a series of sub-factors that determine consumer satisfaction and loyalty in times of COVID-19 pandemic. The authors show that consumer loyalty is highly impacted in this period by the safety measures imposed by food companies, such as no-contact delivery, safety rating, safe packaging, and features adopted such as food temperature control, masks, sanitation. Consumer satisfaction has been directly linked in the COVID-19 pandemic with cashback, discounts and offers, photos, reviews, ratings, and overall quality. Dsouza and Sharma [1] show that consumer satisfaction is a primary driver of consumer loyalty.

Yeo et al. [28] revealed that the intention to use online food delivery increased with improved perception of post-usage usefulness and convenience, factors that highly influence consumer loyalty.

Consumer experience is likely to alter from time to time, and the data scientists use artificial intelligence to understand and predict consumer behaviour and offer customized experiences for sustaining and penetrating new markets. Swiggy uses data analytics to curate the consumer page (list of restaurants) to meet each user's choices and preferences rather than just based on the user's location [21,22]. Taking into consideration the relations previous research on the topic we elaborated the below hypothesis:

Hypothesis 2. Consumer Loyalty directly and positively influences Consumer Decision Process

Empathy is one of the dimensions used by Parasuraman, Zeithaml, and Berry [29] to assess the quality of services, reflecting the attitude of companies towards their consumers. The importance of this value is highlighted by many authors, some of them focusing on the company's empathy and the employees' offering services, some on the consumers' empathy for the employees, and other researchers on both. Wieseke et al. [30] analyse the impact of consumers' empathy for the employees working in services on consumer satisfaction. The authors highlight that satisfaction is increased when both parties act with empathy. A similar

approach is presented by Davis et al. [31], who conducted four studies revealing that empathy has a positive effect on consumers' satisfaction, which can motivate companies to use specific marketing strategies for instilling empathy in their consumers. Pederson [32] brings to the fore the concept of "empathy-based marketing," showing the importance of this value for both companies and consumers. Ngo et al. [33] argue that employee empathy leads to a higher consumer satisfaction, but consumer empathy has also a moderating effect. Their results show that satisfaction provided by the offered services is higher when both employees and consumers are empathic. Fun-Ju [34] concludes that empathy of consumers towards the companies involved in corporate social responsibility projects determine people to even pay a higher price which might be used by companies to increase their profits. Dawson, Soper and Pettijohn [35] analysed the impact of employees' empathy on their performance and their findings did not reveal a positive connection as they previously assumed. Their research focused on car sales where the price is essential and the decision to buy such products cannot be based solely on the empathy of the employees.

Visibility comprises two items: one referring to the promotional materials related to FDAs (promotion) and the recommendations received from other people who use such applications (also known in the literature as a social influence). Alzate, Arce-Urriza, and Cebollada [36] discuss the importance of review visibility for the buying decision, a form of word-of-mouth advertising. Boyland et al. [37] analyse the influence of celebrities used in food consumption commercials. Khaled [38] shows that visibility in the retailing industry is a variable essential for the communication policy of a company. Botta, Farshid and Pitt [39] researched the visibility of universities and the impact of social media on the educational services provided by universities. Visibility is part of a company's marketing strategy, and many authors highlight its role in consumer behaviour and the buying decision-making process.

The food delivery sector faced an important expansion during the COVID-19 pandemic [40–42]. Chotigo and Kadono [42] present various factors that influence the decision to use FDAs. The authors conclude that companies in the food delivery domain should focus on marketing campaigns to raise the visibility of their brands and thus convince people to buy food through their applications. In the authors' opinion, social influence is an essential factor in the consumers' decision to buy, both before and during the pandemic. Prasetyo et al. [40] consider promotion as a determining factor. They concluded that, among other factors such as price, motivation, and quality, promotion "had a significant effect on" the actual use of FDAs [40] (p. 13). Muangmee et al. [41] also analyse the social influence impact on the use of FDAs during the pandemic in Thailand. They conclude that social influence and perceived safety are vital in determining people to use such applications.

Accessibility is an essential feature of FDAs, which refers to three items:

- The accessibility of these applications as a consequence of their intensive marketing campaigns
- The convenience of this ordering food during the pandemic when restrictions affected restaurants or led to the early closing hours of supermarkets and other shops
- The limited possibilities for outdoor entertainment, which made people order food and thus have a form of entertainment

Starting from the critical analysis of the relationship between accessibility and CDP, we developed the following hypothesis:

Hypothesis 3. Accessibility directly and positively influences Consumer Decision Process

Kaur et al. [45] identified prestige value as a positive driver of ordering food via FDAs. The study also shows that price is a significant driver in using FDAs, implying that competitive prices and discounts should be offered to consumers. In order to enhance the prestige value by low pricing strategies, the food companies can opt to offer limited free subscriptions to members, free meals after a certain number of deliveries, or freebies through tie-ups with other firms.

Safety assurance is critical to the survival of online food delivery businesses because of the pandemic, which has raised concerns regarding the raw material used to prepare food. Bringing the trust factor to the consumer experience has become imperative, and the online food space has adapted to this new reality. Food companies have also promoted the use of adopted safety measures such as wearing masks, sanitation, and temperature check in addition to a safer packaging design. Another safety measure integrated into the new business strategy is no-contact delivery, which significantly puts consumers at ease. FDAs have also integrated safety ratings of partners to promote their business and retain their consumer base. The adequate safety measures proposed by Dsouza and Sharma [1] are temperature checks of delivery agents, safety ratings of the cloud kitchen, and safe packaging to ensure that consumer satisfaction is met. Kang and Namkung [46] found that consumers' attitudes and behavioural intentions to use O2O services for ordering food products are significantly impacted by information quality, perceived usefulness, perceived ease of use, source credibility, and consumer trust. Food products must also be promoted on social media, applications, or advertisements, either by using photos, videos, or reviews.

As a result of the critical analysis of the literature, we developed the following hypothesis:

Hypothesis 4. Prestige Value directly and positively influences Consumer Decision Process

Marketing is also part of the service visibility regarding the first item, which makes the FDAs more accessible to the consumers. Prasetyo et al. [40] use in their model the convenience factor. Their results did not show a significant impact of convenience on the decision to use FDAs during the pandemic. Chotigo and Kadono [42] (p. 21) conclude that "convenience and accessibility … are shifting consumer behaviour from dining outside to ordering food". The third item refers to the hedonic motivation accessible through these applications when other forms of entertainment were not possible because of the restrictions. The hedonic motivation was analysed by Prasetyo et al. [40], who concluded that this type of motivation had a significant impact on the decision to use FDAs. Yeo, Goh and Rezaei [28] validated the hypothesis according to which hedonic motivation, among other factors, directly impacts the use of FDAs. On the contrary, Chotigo and Kadono [42] (p.8) excluded the entertainment part from their research, motivating that people use these applications "for their benefit more than for fun or entertainment".

Perceived risk refers to three items: the risk assessment for buying food from supermarkets and other physical stores, the risk assessment for buying food using FDAs, and the influence of this perceived risk on the decision to use food applications during the pandemic. Alcantara-Pilar et al. [7] analyse this variable in a cultural context. Their findings show that language and cultural values mediate the relationship between the perceived risk and the decision to use a website. Zhong et al. [43] (p.14) highlight the importance of the perceived risks in the decision to dine out, stating that "people still have great concerns about getting infected when they are outside." Alaimo et al. [44] introduced the risk of using the FDA in their model but not related to the fear of contacting COVID-19. Instead, they appreciate that people might fear that the products they order are of poor quality or not what they ordered at all.

Considering the complexity of the relationship between risk assessment and consumer loyalty, we elaborated the following hypothesis:

Hypothesis 5. Risk Assessment mediates the relationship between visibility and Consumer Loyalty

As a result of the critical analysis of the literature and based on previous research on the impact of FDAs, empathy and CDP, we developed the following two hypotheses as a result of the complexity of the variables and their synergic interactions:

Hypothesis 6. Food delivery mediates the relationship between Empathy and Consumer Decision Process

Hypothesis 7. Consumer Loyalty mediates the relationship between safety value and Consumer Decision Process

The research model is presented in Fig. 1.

3. Methodology

3.1. Sample

To clearly assess the impact that FDA's have on Consumer Decision Process in the context of the changes generated by a pandemic situation, based on nine main constructs, we used a quantitative survey-based research during the first semester of 2021 (from January 10th, 2021 to April 1st, 2021). We conducted this analysis taking into consideration the steps promoted by Amicarelli et al. [47] (p.2) as follows: a literature review critical analysis; development of the hypotheses in relationship with the first draft of the questionnaire; strategy of sampling and data collection and, finally, we proceeded with the data analysis using statistical software.

The questionnaire was written in Romanian and realized in Google Forms (an online platform used by scholars worldwide to receive anonymous and timely answers, as Hsu and Wang [48] mentioned). In parallel, the questionnaire was promoted and disseminated via social networks (Facebook, Instagram, LinkedIn) to respect the anonymity of the respondents. The questionnaire design followed the recommendations of Podsakoff et al. [49] to prevent response bias. Considering the pandemic situation, we applied the non-probabilistic snowball sampling method recommended by Cohen and Arieli [50] and randomized the questionnaire's items to avoid biases. To measure the items of variables, we carried a pilot study through 50 randomly selected respondents.

Many respondents (n = 622) overcame this non-random technique's internal and external validity limitations and reduced to a minimum the vulnerability to sampling biases. Moreover, in consensus with Hair et al. [53] in our structural model, biases were converged to zero when the sample size increased. We decided to delete all questionnaires with missing values to avoid decreased variation in the data, and we introduced biases when the questionnaires were deleted. Therefore, after we eliminated biases, we counted 445 final valid questionnaires. Finally, we verified whether each construct within our model requires a reflectively or formatively specified measurement model and, as we will provide below, our model requires reflective measurement.

Consequently, our strategy was oriented to reduce or eliminate biases generated by the sample selection via the Internet. Therefore, the non-Internet users and automatically non-FDAs users were excluded.

3.2. Measurement model

In the first stage, we agreed on a few items considering the literature and the particularities of the pandemic crisis. These items were pre-tested between January 10th and January 26th, 2021. The pre-test included 50 subjects to ensure the questionnaire clarity using a five-point Likert scale (from totally disagree to totally agree).

Our final research model was based on the stepwise approach developed by Wolstenholme [51] (p.5) as a modular approach of a reference mode. In our model, the reference mode is CDP, and based on it, we established the feedback loops responsible for a specific CDP.

The valid questionnaires were analysed with SPSS v. 22 for a preliminary validation (in terms of Mean, Standard Deviation, Cronbach Alpha coefficients), and then, we used the SMART-PLS software for a deep analysis of the validity and reliability of the model [52].

According to Hair et al. [53,54], we decided to use the Structural Equation Modelling Part Least Square (PLS-SEM) model because it is characterised by the possibility of handling many independent variables simultaneously.

Henseler and Chin [55] emphasised the importance of a flexible model to analyse the interaction between variables, and even PLS-SEM has no limitations to integrating one or more variables into a path model. Moreover, the PLS-SEM can estimate the model parameters [54].

Dijkstra and Henseler [56], in consensus with Henseler, Ringle and Sinkovics [57], recommended using the bootstrapped method to evaluate the overall model fit.

The final questionnaire consisted of 33 questions divided into ten

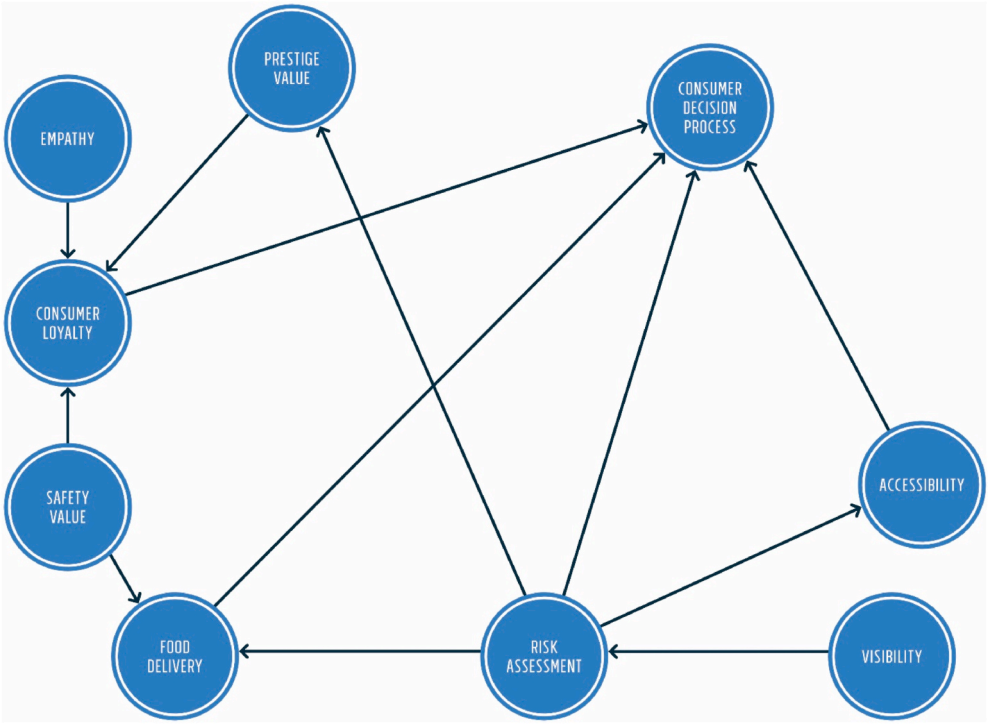

Fig. 1. Research model.

sections: 1) sociodemographic characteristics (four questions); 2) Consumer Decision Process (seven questions); 3) Food delivery (four questions); 4) Consumer Loyalty (five questions); 5) Prestige Value (two questions); 6) Risk Assessment (three questions); 7) Accessibility (three questions); 8) Safety Value (two questions); 9) Visibility (two questions); and 10) Empathy (one question).

The sources of the main variables were adapted from previous studies existing in the literature as follows:

- Consumer Decision Process was adapted from Dsouza and Sharma [1].
- Food delivery was adapted from Chandrasekhar, Gupta, and Nanda [2].
- Consumer Loyalty was adapted from Prasetyo et al. [40].
- Prestige Value was adapted from Kaur et al. [45].
- Risk perception and accessibility were adapted from Alcantara-Pilar et al. [7].
- Accessibility was adapted from Parasuraman, Zeithaml, and Berry [29] and Alcantara-Pilar et al. [7].
- Safety value and consumer loyalty were adapted from Dsouza and Sharma [1].
- Empathy was adapted from Parasuraman, Zeithaml, and Berry [29].

4. Results

The focus group comprised Romanian people aged 18 to 50+ who indicated that they used FDAs and were familiar with these applications. As a result of the control question, the number of valid questionnaires was reduced from 622 to 445, and the sample structure is presented in Table 1. The number of 445 valid answers agree with Hair et al. [58] recommendation related to the initial condition of reliability and applicability of the model.

We used a non-probability sampling technique where the respondents' answers were analysed together, and the sample structure is presented in Table 1.

The structure of the 445 respondents shows a higher share of women (55.7%) than men (44.3%). Youngsters aged 18–25 represented 38%, followed by those aged 26–35 (30.3%) and those aged 36–45 (20.4%). People older than 46 represented a minority in the sample (11.2%). Two-thirds of the respondents got higher education (65.4%), and the rest only high school education (34.6%). Most respondents (79.8%) live with their families, and only 20.2% live alone. These variables (age, gender, studies, and status) will be analysed in the context of using FDAs.

Our reflectively measured construct required the analysis of indicator loadings that should be over 0.70 [59]. Table 2 shows the greater than 0.70 [53] reliability values of the items and the absence of multicollinearity because, according to Gareth et al. [60], a problematic amount of collinearity is for the value that exceeds 5 or 10 of the variance inflation factor (VIF).

The analysis of the above table supports that the values of

Table 1
The structure of the sample.

Variables	Category	Frequency	Percent
Gender	Female	248	55.7
	Male	197	44.3
Age	18–25 years	169	38.0
	26–35 years	135	30.3
	36–45 years	91	20.4
	46–50 years	32	7.2
	over 50 years	18	4.0
Education	High school only	154	34.6
	Graduate degree	291	65.4
Status	Live alone	90	20.2
	Live with family	355	79.8

Table 2
Loadings values and Variance inflation factor (VIF).

Variables/Item	Outer loading	Variance inflation factor (VIF)
Consumer Decision Process - Adapted from Dsouza and Sharma [1]		
AC_19: Have you decided to use FDAs for food purchases to avoid COVID-19 contamination?	0.702	1.755
ADCP: Do you use FDAs in order to reduce the activities involved in the buying process?	0.866	3.233
APAFD: Compared to the period before the COVID-19 pandemic, did you use the FDAs?	0.818	2.764
CB: Were the products purchased using FDAs based on your current needs?	0.800	2.753
DPC: During the pandemic, was your purchasing decision influenced by FDAs?	0.790	2.528
FAFD: Do you use FDAs?	0.815	2.928
PST: Using FDAs, did you buy only the products needed for a short period?	0.790	2.512
Food delivery - Adapted from Chandrasekhar, Gupta, and Nanda [2]		
LTL: Would you use mobile food delivery applications if the delivery fee were lower?	0.837	2.024
PALMCBD: Do you want to make positive statements about the FDAs?	0.783	1.550
PSVALM: Do you appreciate the variety of products and prompt services offered through the FDAs?	0.874	3.357
TefALM: Do you appreciate the value offered by the FDAs in terms of saving time and effort?	0.874	3.380
Consumer Loyalty - Adapted from Prasetyo et al. [40]		
EFALM: Do you think the use of FDAs is effective?	0.882	3.726
FCALM: Do you want to change food purchases through FDAs in the future?	0.806	1.978
PAALM: Do you use FDAs because the prices are reasonable, and the benefits offered are significant?	0.894	4.409
POALM: Do you choose FDAs because you receive personalized offers and price reductions or other benefits for repeated purchases?	0.756	1.704
RFALM: Do you want to recommend FDAs to friends and relatives?	0.882	4.245
Prestige Value - Adapted from Kaur et al. [45]		
DEER: Do you choose to use FDAs because you consider that you support the evolution of the digital economy and technology in Romania?	0.922	1.955
FALM: Do you find the use of FDAs fashionable, and do you enjoy sharing your personal experience with friends?	0.921	1.955
Risk Assessment – Adapted from Alcantara-Pilar et al. [7]		
AFH: What is your perception of the health risk of the following food procurement options? For example, Purchasing food through supermarket partner applications/ordering meals at home.	0.790	1.532
RCBD: Given the risk associated with the purchase of food in the supermarket, online respectively, through applications, do you consider that it influenced your decision to use these applications?	0.881	1.697
RFS: What is your perception of the health risk of the following food procurement options? For example, the purchase of food from the supermarket and markets.	0.817	1.608
Accessibility - Adapted from Parasuraman, Zeithaml, and Berry [29] **and Alcantara-Pilar et al.** [7]		
EBCD: Did the reduced possibilities of outdoor entertainment influence your decision to use FDAs?	0.882	2.219
MKCBP: Given the increased marketing of food delivery applications, do you believe that it influenced your decision to use these applications?	0.883	2.125
RC_19CBD: Given the restrictions imposed by the pandemic (reduced hours at supermarkets and restaurants closed or with reduced capacity, restrictions at night), do you think that they	0.891	2.271

(*continued on next page*)

Table 2 (*continued*)

Variables/Item	Outer loading	Variance inflation factor (VIF)
have influenced your decision to use these applications?		
Safety Value - Adapted from Dsouza and Sharma [1].		
SEFALM: Do you choose FDAs because you think you can evaluate food safety?	0.953	2.920
SFALM: Do you choose FDAs because you think it is safer than going to the supermarket/ restaurant (reduced personal contact, food packaging is safe, the regulations in force specific to the COVID 19 pandemic are observed, etc.)?	0.950	2.920
Visibility – Own contribution		
FALMI: Have you heard from other people about the FDAs and this is how you decided to use them?	0.940	2.383
PUBALM: Have you seen many promotional materials related to FDAs and decided to use them?	0.937	2.383
Empathy - Adapted from Parasuraman, Zeithaml, and Berry [29]		
FSALM: Has the desire to support companies affected by restrictions during the pandemic led you to use FDAs more often?	1.000	1.000

Quality criteria was presented in Table 3 using the indicator Cronbach's Alpha (CA), composite reliability (CR) and the Dijkstra-Henseler [56] statistics (rho_A).

Table 3
Construct reliability and validity.

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Accessibility	0.862	0.863	0.916	0.784
Consumer Decision Process	0.904	0.906	0.925	0.638
Consumer Loyalty	0.899	0.898	0.926	0.715
Empathy	1.000	1.000	1.000	1.000
Food delivery	0.864	0.865	0.907	0.710
Prestige Value	0.823	0.823	0.919	0.849
Risk Assessment	0.777	0.808	0.869	0.689
Safety Value	0.896	0.896	0.950	0.905
Visibility	0.865	0.865	0.937	0.881

Cronbach's Alpha (CA) and of the composite reliability (CR) were more significant than 0.7, which implies a very good level of reliability [61]. The average variance extracted (AVE) values are higher than 0.5 and show a very good model validity [62,63].

The R Square value is moderate to good because it ranges from 0.313 (Risk assessment) to 0.619 (Consumer loyalty). The model is significant because the value of Mean Square Residual (SRMR) is 0.07, and NFI (normed fit index) is 0.97.

We identified the following most relevant FDAs for our research sample, according to the latest studies: Glovo, Food Panda, Takeaway, Bringo, and TAZZ [64]. We will further describe the consumer behaviour correlated to these apps concerning the variables of age, gender, education, and household status (single household/multi-person household). In Table 4 there are presented the preferences for the five FDAs, where 1 reflects a low preference and 5 a high preference of the consumers for FDAs.

Analysing the above table, we realized the following hierarchy of FDAs: Glovo (36.7% of the respondents have a high and very high preference for this application), followed closely by Food Panda (36.2%). As an important difference, the respondents mentioned Take Away (12.3% high and very high preference), Tazz, and Bringo (8.5% each). It is also important to note that 10.1% of the respondents prefer other applications. This consumer segment can represent a real potential for the new developers of the FDAs.

Table 5 presents the correlations between variables and the FDAs.

Our research shows that the gender variable is not strongly correlated to any of the FDAs mentioned above. However, there is a correlation between men and their preference towards Takeaway (Pearson Correlation Factor is 0.112).

Concerning the preferences of specific age categories towards the FDAs, our research shows that the younger respondents prefer Food Panda and Glovo, while the older respondents' preference is strongly oriented towards Bringo.

The correlation between the education level and Glovo shows that the skilled professionals prefer this FDA, which is an important finding for the targeting strategy of the company.

Our study shows a high positive correlation between TAZZ and Bringo, which leads us to conclude that the two FDAs have a similar perceived value for the respondents. Also, Takeaway and TAZZ are positively correlated, which means that the respondents do not have a clear preference towards either of the two FDAs and are thus likely to switch between the two companies if they receive an added value or special offers. Glovo and Food Panda also have similar positioning in the respondents' view, demonstrated by the Pearson Correlation Factor of 0.465 between the two FDAs.

These findings are highly relevant for the companies, as they show a low level of user loyalty towards FDAs, and a similar perceived value. Companies can implement loyalty programs that are very likely to influence the users' buying decisions.

Uncles et al. [26] describe two different perspectives on loyalty programs, either as vehicles for maintaining customer loyalty or brand share. Considering that our findings demonstrate a divided-brand loyalty, a more realistic aim for companies is to build on existing levels of brand acceptance rather than trying to induce single-brand loyalty. FDAs consumers in our research seem to have good reasons for being multi-brand loyal, so it is unrealistic for brand managers to expect them suddenly to become single-brand loyal. The best way for customers to reallocate some of their category purchasing to a particular FDA is a loyalty program to address the underlying reasons for polygamy.

Concerning the respondents' general preference for the analysed FDAs, we conclude that an average of 23.23% of the respondents are neutral on all FDAs, with no significant difference between them. For Bringo, TAZZ, and Takeaway, a cumulative percentage of more than 87% of the respondents' preference is very low, low, or neutral, while more than 50% of the respondents declared they have a low preference for the three FDAs. Glovo and Food Panda have a better preference score, as more than 33% of the respondents declared that they are highly

Table 4
The FDAs consumers' preferences.

Value	Glovo Frequency (Percent)	Food Panda Frequency (Percent)	Take Away Frequency (Percent)	Tazz Frequency (Percent)	Bringo Frequency (Percent)	Other Frequency (Percent)
1	130 (29.2)	129 (29.0)	223 (50.1)	247 (55.5)	252 (56.6)	237 (53.3)
2	61 (13.7)	53 (11.9)	49 (11.0)	59 (13.3)	53 (11.9)	56 (12.6)
3	91 (20.4)	102 (22.9)	118 (26.5)	101 (22.7)	102 (22.9)	107 (24.0)
4	96 (21.6)	101 (22.7)	41 (9.2)	25 (5.6)	24 (5.4)	31 (7.0)
5	67 (15.1)	60 (13.5)	14 (3.1)	13 (2.9)	14 (3.1)	14 (3.1)
TOTAL	**445 (100.0)**	**445 (100.0)**	**445 (100.0)**	**445 (100.0)**	**445 (100.0)**	**445 (100.0)**

Table 5
The correlations between variables and the FDAs.

		Gender	Age	Education	Status	Glovo	Food Panda	Take Away	Tazz	Bringo	Other
Gender	Pearson Correlation	1	-.254[a]	.160[a]	.159[a]	.068	.039	.112[b]	-.025	-.038	.037
	Sig. (2-tailed)		.000	.001	.001	.152	.414	.018	.596	.420	.434
	N	445	445	445	445	445	445	445	445	445	445
Age	Pearson Correlation	-.254[a]	1	-.005	.127[a]	-.115[b]	-.129[a]	-.017	.026	.189[a]	.161[a]
	Sig. (2-tailed)	.000		.917	.007	.015	.007	.728	.590	.000	.001
	N	445	445	445	445	445	445	445	445	445	445
Education	Pearson Correlation	.160[a]	-.005	1	.092	.126[a]	.066	.074	.052	.005	.004
	Sig. (2-tailed)	.001	.917		.052	.008	.163	.120	.276	.913	.931
	N	445	445	445	445	445	445	445	445	445	445
Status	Pearson Correlation	.159[a]	.127[a]	.092	1	.026	.035	-.001	.002	.049	.076
	Sig. (2-tailed)	.001	.007	.052		.591	.464	.988	.960	.304	.108
	N	445	445	445	445	445	445	445	445	445	445
Glovo	Pearson Correlation	.068	-.115[b]	.126[a]	.026	1	.465[a]	.445[a]	.343[a]	.260[a]	.162[a]
	Sig. (2-tailed)	.152	.015	.008	.591		.000	.000	.000	.000	.001
	N	445	445	445	445	445	445	445	445	445	445
Food Panda	Pearson Correlation	.039	-.129[a]	.066	.035	.465[a]	1	.275[a]	.213[a]	.226[a]	.126[a]
	Sig. (2-tailed)	.414	.007	.163	.464	.000		.000	.000	.000	.008
	N	445	445	445	445	445	445	445	445	445	445
Take Away	Pearson Correlation	.112[b]	-.017	.074	-.001	.445[a]	.275[a]	1	.581[a]	.492[a]	.403[a]
	Sig. (2-tailed)	.018	.728	.120	.988	.000	.000		.000	.000	.000
	N	445	445	445	445	445	445	445	445	445	445
Tazz	Pearson Correlation	-.025	.026	.052	.002	.343[a]	.213[a]	.581[a]	1	.553[a]	.459[a]
	Sig. (2-tailed)	.596	.590	.276	.960	.000	.000	.000		.000	.000
	N	445	445	445	445	445	445	445	445	445	445
Bringo	Pearson Correlation	-.038	.189[a]	.005	.049	.260[a]	.226[a]	.492[a]	.553[a]	1	.521[a]
	Sig. (2-tailed)	.420	.000	.913	.304	.000	.000	.000	.000		.000
	N	445	445	445	445	445	445	445	445	445	445
Other	Pearson Correlation	.037	.161[a]	.004	.076	.162[a]	.126[a]	.403[a]	.459[a]	.521[a]	1
	Sig. (2-tailed)	.434	.001	.931	.108	.001	.008	.000	.000	.000	
	N	445	445	445	445	445	445	445	445	445	445

[a] Correlation is significant at the 0.01 level (2-tailed).
[b] Correlation is significant at the 0.05 level (2-tailed).

or very highly satisfied by the two FDAs and would prefer to use them.

Table 6 provides the correlations between latent variables.

The visibility of the FDAs is highly correlated with the empathy level of consumers. This suggests that the higher the media coverage and communication reach of the FDAs, the stronger the positive attitude of consumers to them during the COVID-19 pandemic. The social influence of other consumers expressed through electronic word of mouth might also have a significant impact on the empathy level and thus on the positive brand positioning.

Food delivery attributes also have a positive, linear correlation with consumer loyalty, with a Pearson Coefficient of 0.838. We can conclude that the low pricing strategy, higher perceived value, as well as cost and time saving associated with using FDAs create a larger loyal customer base more likely to recommend and give positive feedback, thus enhancing their visibility.

The risk assessment is highly correlated to the safety value and accessibility, an important finding for companies to implement strategies in order to reduce the perceived risks during the COVID-19 pandemic.

Considering that all Pearson Coefficients are greater than 0.5, we can conclude that the consumer behaviour drivers identified in the present study are interdependent, which highlights their individual importance, as well as their collective impact on the purchase decision.

The hypothesis validation is presented in Table 7.

Table 6
The correlations between latent variables.

		CDP	RA	FD	Accessibility	PV	SV	CL	Visibility	Empathy
CDP	Pearson Correlation	1	.543[a]	.694[a]	.692[a]	.612[a]	.562[a]	.691[a]	.610[a]	.541[a]
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000	.000
RA	Pearson Correlation	.543[a]	1	.523[a]	.640[a]	.574[a]	.641[a]	.523[a]	.552[a]	.566[a]
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000	.000
FD	Pearson Correlation	.694[a]	.523[a]	1	.737[a]	.724[a]	.661[a]	.838[a]	.691[a]	.594[a]
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000	.000
Accessibility	Pearson Correlation	.692[a]	.640[a]	.737[a]	1	.717[a]	.679[a]	.732[a]	.727[a]	.681[a]
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000
PV	Pearson Correlation	.612[a]	.574[a]	.724[a]	.717[a]	1	.742[a]	.733[a]	.756[a]	.646[a]
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000	.000
SV	Pearson Correlation	.562[a]	.641[a]	.661[a]	.679[a]	.742[a]	1	.704[a]	.685[a]	.632[a]
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000	.000
CL	Pearson Correlation	.691[a]	.523[a]	.838[a]	.732[a]	.733[a]	.704[a]	1	.777[a]	.614[a]
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000	.000
Visibility	Pearson Correlation	.610[a]	.552[a]	.691[a]	.727[a]	.756[a]	.685[a]	.777[a]	1	.593[a]
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		.000
Empathy	Pearson Correlation	.541[a]	.566[a]	.594[a]	.681[a]	.646[a]	.632[a]	.614[a]	.593[a]	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	

[a] Correlation is significant at the 0.01 level (2-tailed).

Table 7
The hypotheses validation.

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Decision
H1: Food delivery -> Consumer Decision Process	0.238	0.235	0.064	3.701	**0.000**	**Accepted**
H2: Consumer Loyalty -> Consumer Decision Process	0.230	0.235	0.066	3.484	**0.001**	**Accepted**
H3: Accessibility -> Consumer Decision Process	0.260	0.259	0.059	4.420	**0.000**	**Accepted**
H4: Prestige Value -> Consumer Loyalty	0.402	0.402	0.052	7.706	**0.000**	**Accepted**
H5: Visibility ->Risk Assessment -> Consumer Decision Process	0.073	0.073	0.024	3.047	**0.002**	**Accepted**
H6: Empathy -> Consumer Loyalty -> Consumer Decision Process	0.038	0.038	0.016	2.444	**0.019**	**Accepted**
H7: Safety Value -> Food delivery -> Consumer Decision Process	0.132	0.130	0.037	3.548	**0.000**	**Accepted**

We observe that for all hypotheses, the values of *t*-test analysis are higher than 2.4, and the values of p-values are less than 0.05 [63].

Fig. 2 shows Bootstrapping results and clearly underlines the robustness of the research model.

Hypothesis 1 *is validated ($t = 3.701$, $p = 0.000$)*. In the case of online food delivery, the prior literature contended that consumers' motivation to use the FDAs is driven not only by convenience [14], but also by consumption values [15], which are both utilitarian and hedonic [16]. Our research shows that there is a direct and positive correlation between the attributes of the FDAs and the purchasing decision of the users. The main values, which are considered by consumers when they evaluate the FDAs' performance, are the following: reasonable prices, cost and time saving, product variety, and prompt services.

Hypothesis 2 *is validated ($t = 3.484$, $p = 0.001$)*. Our research shows that the higher the loyalty score is, the more frequent the users will use the FDAs. The loyalty score was calculated by the users' rating on items such as the impact of special offers and strategies for repeated purchases, the willingness to try other FDAs, the perceived efficiency of the preferred FDA, the readiness to recommend the FDA and give positive feedback about it. Our finding is relevant, as it shows that, as the consumer becomes loyal to a certain FDA, they are more likely to increase their spending by using the FDA more frequently, motivated by the perceived added value. Food delivery companies should focus on implementing customer loyalty strategies, likely leading to an

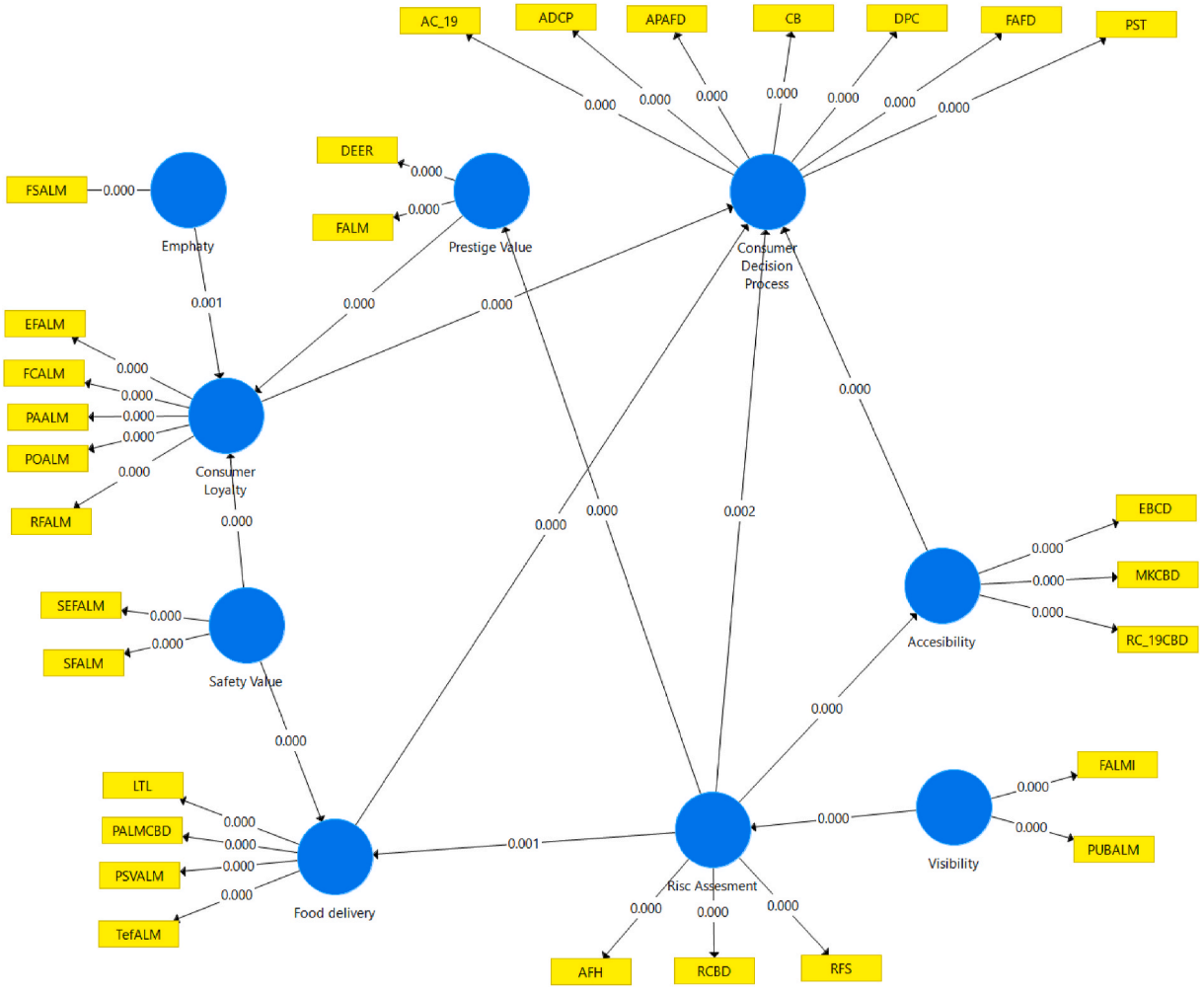

Fig. 2. Bootstrapping results.
Source: Data processed with SmartPLS3

immediate increase in sales.

Hypothesis 3 is validated (t = 4.420, p = 0.000). Our findings that demonstrate a direct and positive influence of accessibility on consumer decision to buy food using FDAs agree with the research of Carvalho et al. [65], who concluded that there is a significant relationship between accessibility and the buying intention. Moreover, the results of Chotigo and Kadono [42] underline the relevance of our findings. They analyse the relationship between accessibility and the decision to buy food online instead of going to eat outside and highlight that this factor has an important contribution to this change in the consumers' behaviour. Prasetyo et al. [40] did not find a correlation between accessibility and CDP in the context of the pandemic crisis. Ordering food using FDAs is convenient, but this feature was not directly affected by the restrictions imposed during the COVID-19 pandemic.

Hypothesis 4 is validated (t = 7.706, p = 0.000). Our research agrees with the results of Kaur et al. [45], as prestige value is positively correlated with the consumer buying decision, thus becoming a positive driver of the intention to order food via FDAs. It is important to mention that the rating of the perceived prestige value was calculated by evaluating both the need for social validation when using FDAs -which are considered fashionable- and the social need to be part of the digital revolution and technological development of the Romanian business sector.

Hypothesis 5 is validated (t = 3.047, p = 0.002). Our findings show that the risk perceived by the consumers directly influences their decision to order food using FDAs. Thus, the relation between visibility and consumer loyalty might be affected by the perception of the potential risk when ordering food or buying it from a physical store. Our findings are relevant as they complement the previous studies conducted before the pandemic crisis. Lai-Ming Tam [66] concluded that the perceived risk has a moderating effect on the relationship between the perceived value and the loyalty towards the services which imply a high contact, and Nobar and Rostamzadeh [67] showed that consumer experience and satisfaction influence consumer loyalty thus generating more power and visibility for the brand.

Hypothesis 6 is validated (t = 2.444, p = 0.019). Bahadur et al. [68] show that the employees' empathy has an important impact on consumer satisfaction and the latter on consumer loyalty, their research focusing mainly on banking services. Another research study conducted by Bahadur, Aziz, and Zulfiqar [69] highlights the positive and indirect effect of employee empathy on consumer loyalty in the telecommunication sector. Ngo et al. [33] also showed that both employee and consumer empathy lead to higher consumer satisfaction, especially when both parties are empathic when interacting with each other. Our findings show a mediating role played by consumer loyalty between empathy and consumer decision to use FDAs.

Hypothesis 7 *is validated (t = 3.548, p = 0.000)*. Our findings confirm that online food delivery variables influence the consumer decision to use FDAs, as demonstrated by the validation of the research hypothesis that underlined the direct and positive relationship between food delivery features and CDP. We conclude that factors such as the low pricing strategy, wide product range, responding on time to orders, and enhancing the users' savings in terms of cost and energy can influence the relationship between the perceived safety of the buying process and the frequency and value of the FDAs purchases.

Our study is the first to explore the relationship between Romanian CDP and the use of FDAs and, considering the validity and reliability of the model, it can also be used at regional and international levels.

5. Discussions

The theoretical implications of our research lie in the interest in the factors that directly influence the consumer buying decision. Thus, factors such as consumer loyalty, risk assessment, visibility, and accessibility have a direct influence on the consumers' buying decisions, which is in accordance with other studies [33,40,42,67,68], as we presented in the literature review and results sections.

Our research does not show any significant differences in user behaviour in the online food delivery space concerning their income or finances from a socio-economic perspective. However, customer behaviour is influenced by the household status (single person household/family household).

From a managerial perspective, our results show that food delivery companies in Romania should focus on implementing customer loyalty strategies, as the users' perceived risk of changing the online food supplier is high [70].

During the COVID-19 pandemic, the safety measures implemented and communicated by the food delivery companies had a high impact on the consumer buying decision. Managers should focus on transparency regarding the food delivery process, with enhanced communication on the safety measures implemented across the value chain.

Another important finding, from a managerial perspective, is that reasonable prices, cost and time saving, product variety, and prompt services are the main values that have a high impact on the purchasing decision.

The practical implications of our research consist in the possibility for the companies delivering food to use the findings of this study to influence the decision of their potential consumers and thus increase their opportunities in an industry that was seriously affected during the restrictions caused by the pandemic situation. Companies can adjust their offer to raise the satisfaction of their consumers who changed their behaviour under the present conditions. Thus, investing in marketing and providing a safe product for the consumer, creating a relationship based on trust, are decisions that can ensure higher consumer satisfaction and loyalty even in harsh times like the pandemic.

The current research covers complex aspects of the food delivery industry in Romania and can be a solid ground for developing best practice guides regarding socio-economic and legislative elements in Romania and the European Union.

Future research directions will be oriented to the relationship between consumer behaviour in new normality and the consumers' perception of FDAs regarding their flexibility and usability. We will find answers to the following question: Is CDP influenced by the features of the FDAs or by the quality of the product?

6. Conclusion

Our research aims to assess the direct effects that FDAs have on consumer decision process in the context of the changes caused by the COVID-19 pandemic. This reality increased the importance of the risk assessment factor as compared to the period before the pandemic.

The research model will be further developed by introducing new consumption values that influence consumer behaviour in the online food delivery industry, as acknowledged in other online to offline industries such as tourism and hospitality [47,71].

Future research should provide a comparative analysis between Romania and other countries to define specific consumer behaviour patterns that can help food delivery companies adapt their customer service strategy and enhance customer satisfaction across international delivery channels.

Another key point identified in the online food delivery industry literature refers to heavy traffic and longer delivery time that reduce customer satisfaction and the usage frequency of FDAs [12]. We intend to further analyse the impact of these variables on consumer behaviour in Romania and investigate the opportunity for innovative solutions such as drone food delivery as described by Hwang et al. [11,72].

Authorship statement

All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated sufficiently in the work to take public responsibility for the content, including participation in the

concept, design, analysis, writing, or revision of the manuscript. Furthermore, each author certifies that this material or similar material has not been and will not be submitted to or published in any other publication before its appearance in the *Hong Kong Journal of Occupational Therapy*.

Authorship contributions

Please indicate the specific contributions made by each author (list the authors' initials followed by their surnames, e.g., Y.L. Cheung). The name of each author must appear at least once in each of the three categories below.

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