

What are you eating today: Conjoint analysis of drivers and inhibitors of online food ordering

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Abstract

The entire start-up ecosystem in India has changed tremendously over the past five years and more and more products and services are going the digital way. From buying daily grocery online, getting your car serviced or ordering food online has become a daily routine for many. Online food-delivery platforms are expanding choice and convenience, allowing customers to order from a wide array of restaurants with a single tap on their smart phones. The business of delivering restaurant meals to the home is undergoing rapid change as new online platforms race to capture markets and customers across most of the metropolitan cities in India. This study uses fuzzy-set qualitative comparative analysis (fsQCA) to analyze the influence of motivations and barriers on online food ordering from a compilation of 36 motivational and 15 discouraging items of e-commerce as conditions, and purchase behavior as outcome. The empirical analysis uses responses of 417 Internet users to an online questionnaire. The method includes a previous principal component analysis that reduces the number of conditions to 8 motivations (hedonic, product variety, product customization, convenience, price, lack of sociality, and Internet exclusive availability) and 4 barriers (in-person, risk, and delivery). Fs QCA offers insight into the knowledge of online food ordering drivers and inhibitors, with relevant implications for theory and practitioners.

Keywords: conjoint analysis, fsQCA, online food ordering, consumer behaviour

1. Introduction

The trend of food start-ups has been catching the spotlight and India seems to be having a growing appetite for such start-ups. Till date, the most common form of delivery has been the traditional model in which the consumer calls up the restaurant, orders food and then waits for the restaurant to bring the food. However, with the rise of digital technology, the market is being redefined. Customers are using mobile apps or websites to identify all the nearby restaurants, scan through the menu and select the cuisine, they intent to eat and order the food with the click of a button or tap of a finger. Consumers accustomed to online shopping through apps or websites, with maximum convenience and transparency, expect the same experience when it comes to online food ordering.

The Internet is an essential shopping channel that grows constantly both in number of users and turnover. For instance, the number of Indian online shoppers among Internet users have increased from merely 0.1 million in 2006 to around 100 million in 2017, which is a growth of 900% (A.T. Kearney, 2016). This rapid growth raises interest in academia and turns e-commerce into an attractive field of research. Different areas of research try to answer why customers decide to shop online. Some studies use the acceptance models that originate from the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975), where behavioral intention is the main predictor of human behavior. Examples in the field of e-commerce adoption include the technology acceptance model (TAM) (Davis, 1989) & Gefen, Karahanna, & Straub, 2003), the theory of planned behavior (TPB) (Bhattacharjee, 2000) [3], or

the evolution of the unified theory of acceptance and use of technology (UTAUT2) (Venkatesh *et. al* 2003) & Pascual-Miguel, Agudo- Peregrina, & Chaparro-Peláez, 2015). Another stream of research focuses on the primary motivations that drive consumers to buy online. These studies identify the individual benefits that consumers may obtain from using e-commerce, such as product variety (Alba *et al.*, 1997) [1], convenience (Burke, 1997) [6], or search costs (Bakos, 1997) [2]. Upon the results from these studies, subsequent research builds a framework comprising extrinsic motivations and intrinsic motivations (Ryan & Deci, 2000) [22] to identify different typologies of shoppers according to combinations of motivations (Iglesias-Pradas, Pascual-Miguel, Hernández-García, & Chaparro-Peláez, 2013) [11]. On the opposite side, other studies investigate why people do not buy online. This line of research pinpoints deterrents such as risk (Forsythe, Liu, Shannon, & Gardner, 2006) or trust (Gefen, 2000).

Regardless of the approach, most of the previous studies use multiple regression analysis (MRA). The use of MRA is common in online shopping adoption research especially where data collection relies on cross-sectional self-reports that use fixed n-point scales (Woodside, 2011), but MRA has three main limitations (Woodside, 2013) [27]. First, MRA does not provide information about the interaction among a model's dependent and independent variables. Furthermore, the influence might vary depending on the variables the model includes. Second, MRA relies on a symmetrical approach, excluding possible asymmetric relations between variables. Third, correlation coefficients do not explain non-

linear relations among variables.

To solve the above limitations, some lines of research turn to Ragin's (1989) analytical proposal, qualitative comparative analysis (QCA), and its variant fsQCA (fuzzy-set qualitative comparative analysis). This approach facilitates the analysis of complex causality and logical relations among combinations of conditions and an outcome, allowing researchers to assess the necessity and sufficiency of conditions in relation to an outcome (Ragin, 2008a) ^[17].

In addition, fsQCA is useful for exploring causal configurations or combinations of causes, as well as for examining multiple causal paths that lead to the same outcome. Consequently, this study uses fsQCA to examine the motivations and barriers for the adoption and rejection of online food ordering by shoppers. In doing so, two main objectives arise. First, results of the study can complement previous studies that use regression models. Second, as the growth of e-commerce and Internet-literacy change consumers' perceptions, the contrast of results with prior research also helps to analyze the evolution of drivers and inhibitors of online food ordering.

2. Theoretical Framework

2.1 Motivations as drivers of online shopping

A total of 10 constructs were identified for motivation in the study. These constructs have been derived from two sources. Firstly, basis review of literature, 8 constructs were identified and 2 constructs were identified basis personal interviews with sample respondents and subject matter experts. Consumers traditionally identify shopping convenience as the main reason to shop from home (Darian, 1987), mainly because they save time (Ganesh, Reynolds, Luckett, & Pomirleanu, 2010; Overby & Lee, 2006). Nevertheless, multiple dimensions of convenience exist. First, convenience also relates to the lesser effort shoppers experiment while shopping online, be this effort physical (Shamdasani & Yeow, 1995) ^[23], psychological (Childers, Carr, Peck, & Carson, 2001), or cognitive (Bosnjak, Galesic, & Tuten, 2007) ^[4]. Furthermore, convenience also has to do with flexibility and ubiquity (Chang, Lai, & Wu, 2010; Gehrt, Onzo, Fujita, & Manesh, 2007) ^[7]. This flexibility facilitates impulsive purchasing (Konus, Verhoef, & Neslin, 2008) ^[12]. Finally, other authors recognize choice of payment method as another dimension of convenience in online shopping (Brown, Pope, & Voges, 2003) ^[5]. Convenience with regards to online food ordering is related to General convenience, time saved, effort saved, flexibility and variety of payment options available. Economic reasons also motivate consumers to choose e-commerce. Besides, Internet allows consumers to compare prices from different food retailers easily (Noble, Griffith, & Adjei, 2006) ^[15] and to gather quick, costless, and effortless information (Chang *et al.*, 2010) ^[7].

Internet also offers a great variety of products, brands, and restaurats (To *et al.*, 2007), and therefore shoppers may find specific products more easily (Wolfenbarger & Gilly, 2000). Offers in the form of cash back or discounts is the most recent trend in online shopping. There are plethora of coupons or deals available online, which enables consumers to get offers in the form of discounts or cash backs. A report by Forrester Inc 2015, mentioned that 45% of online shoppers in USA only depend on these discounts while purchasing online. It can be argued that offers/discounts and comparing prices

across food retailers are important factors for online food ordering.

Social influence plays a major role in online food ordering. Social influence refers to the perceived influence from social networks and important others for/against a certain behavior. The significance of social influence on consumers' adoption decisions can be further explained from the lens of the social information processing theory. The social information processing theory posits that individuals adapt their attitudes, behavior, and beliefs to their social context. Drawing on this theory, Fulk and his colleagues suggest that "information passed through individual's social networks influences their perceptions of a target technology".

Furthermore, there are empirical evidence that social influence positively influences the intention to use a new information technology. Online reviews and rating is a trend now days. It was seen from the personal interviews that a lot of respondents reviews a restaurants before placing an order. The online reviews of the restaurants are also taken into account before finalizing on a restaurant (Ganesh *et al.*, 2010). The lack of physical contact between buyer and seller may be both a driver and a barrier to online shopping. As a driver of online shopping, the lack of physical contact allows e-shoppers to avoid social interaction with sales people or other customers (Kukar-Kinney, Ridgway, & Monroe, 2009) ^[13].

Intrinsic or hedonic motivations are also important drivers of online shopping. Hedonic motivations comprise factors such as enjoyment (Girard, Korgaonkar, & Silverblatt, 2003), adventure feelings (Chang *et al.*, 2010) ^[7], or mood elevation because of the online shopping process itself (Childers *et al.*, 2001) or because of the benefits of e-commerce, such as finding bargains (O'Brien, 2010).

Information seeking acts as a motivation for consumers while searching for any information about the restaurant (Burke, 2002). Now days consumers look at the photos posted by other consumers or the staff of the restaurant to decide on a place for ordering food. Consumers feel that if a place is designed well and kept clean, the food quality will also be good as the management is taking interest in maintaining the restaurant. The digital menu offered by the restaurants are also equally important in finalizing a restaurant fort food delivery. Finally, online food aggregators allows consumers to have a variety of options to choose from, which also acts as a motivator for consumers in making a choice. Once, the food is delivered, the delivery time again acts as a motivator for consumers. A faster delivery time ensures loyalty and repeat orders. The orders can be tracker by customers through mobile apps or websites, which instills confidence in customers and act as motivators.

2.2 Barriers to purchase online

Because of the impossibility of establishing physical contact between shoppers and restaurants, and between shoppers and products, customers might feel risk and distrust. Risk consists of two dimensions. The first one relates to making payments over the web (Vijayasathya, 2004) the second relates to the product, because consumers cannot examine personally the products before ordering them (Choi & Geistfeld, 2004) ^[9]. Distrust emerging from lack of contact also has two dimensions: toward online Restaurants, on the one side, and toward the Internet as a shopping channel, on the other

(Gefen, 2000). Prior research also identifies barriers in relation to the shopping process. On the one hand, shoppers cannot intervene personally in the shopping process (Doolin, Dillon, Thompson, & Corner, 2005). On the other hand, consumers might find different problems with product delivery (Swinyard & Smith, 2003) [24]. If the delivered food is not as per expectations, not everyone might have the time to argue with the vendor over the quality of food, send it back and ask for a fresh order.

Fidelity to physical restaurants might also be a barrier for switching to online aggregators (Brown *et al.*, 2003) [5]. Consumers have a personal rapport with restaurants, and the personal rapport becomes latent while ordering online. A delayed order earns a negative review for the restaurant and eventually impacts its rating. A lesser rating becomes a barrier for consumers to choose a particular restaurant. Around 58% of respondents during the personal interviews expressed concern with the delivery. They mentioned that restaurants give preference to walk in customers as compared to online orders which results in a delayed delivery. Table 1 summarizes the motivations and barriers to online shopping.

Table 1: List of motivations and barriers

Motivations		
Convenience	General convenience Effort saving Time saving Online reservations Payment methods	
Economics	Offers/discount Comparing prices	
Information seeking	Photos Digital Menu	
Variety	Variety	
Social influence	Social influence	
Impulsiveness	Impulsiveness	
Hedonic	Enjoyment Mood	
Service quality	Reviews Online ratings	
Customization	Customization	
Logistics	Order tracking Status updates	
Review and Ratings	Online reviews Online rating Feedbacks	
Barriers		
Risk	Payment Food quality	
Trust	Restaurants Internet channel	
Physical contact	Physical contact	
Delivery	Delivery	
Fidelity	Fidelity	

Table 3: Descriptive statistics of motivation, barriers and outcome after and before calibration (N=417)

Variables before calibration					
Variable	Name	Mean	Std.dev	Min	Max
Motivation					
Hedonic	m_hedonic	1.04	0.87	-0.60	4.70
Variety	m_var	2.83	1.12	-1.08	5.29
Review and Ratings	m_rev_rat	1.63	1.27	-1.47	6.17
Convenience	m_conv	4.01	1.07	0.41	6.40
Impulsiveness	m_impul	2.61	1.19	-0.090	5.83

3. Methods and results

3.1 Sample

An online survey yielded data for the empirical analysis. The sample comprises 417 complete responses from a total of 1360 responses (30.6%). Students from college/universities in and around Delhi NCR completed the questionnaire. Table 2 shows the main characteristics of the survey. In general, the profile of respondents is similar to Indian online shoppers (A.T Kearney, 2014).

Table 2: Sample characteristics

		N	Percentage
Gender	Male	200	48%
	Female	217	52%
Age	17-21	200	48%
	22-26	101	24%
	>26	89	21%
Experience in the use of internet	1-3 years	189	45%
	4-7 years	217	52%
	>7 years	11	3%
Frequency in the use of internet	< 1 h/day	11	3%
	1-3 hrs/day	158	38%
	4-7 hrs/day	190	46%
	>7 hrs/day	44	11%
	Never	3	1%
Experience in online food ordering	Once in few weeks	11	3%
	1-3 years	228	55%
	4-7 years	57	14%
	>7 years	3	1%
Frequency of online food ordering	Never	51	12%
	Once	78	19%
	Once a week	98	24%
	More than once a week	158	38%
	Once in few weeks	110	26%
	Never	51	12%

3.2 Measures

The survey contains a list of 40 items of motivations and 15 items of barriers from prior literature, and uses a five-point Likert scale (from ‘1 - Does not correspond at all’ to ‘5 Corresponds exactly’). Because all respondents have previous experience in shopping online (Table 2), intention to purchase contains also knowledge from experience (Taylor & Todd, 1995). In fact, respondents report high levels of purchase intention. This characteristic of the sample suggests that actual purchase behavior might be an appropriate outcome.

3.3 Data analysis

The analysis of the empirical data consists of three steps. First, two principal component analyses (PCA) reduce the dimensions of the list of motivations and barriers, respectively.

Service quality	m_servq	0.64	1.08	-1.92	4.69
Price	m_price	2.53	1.23	-0.51	5.57
Information seeking	m_info	2.25	0.90	-0.51	5.89
Social Influence	m_si	2.58	1.11	0.44	6.10
Logistics	m_log	2.23	1.06	0.32	5.08
Barriers					
In person	nm_in_person	4.13	1.23	0.57	6.79
Risk	nm_risk	3.87	1.01	1.36	6.98
Trust	nm_trust	3.21	1.01	1.23	5.12
Delivery	nm_del	1.85	1.26	-0.58	5.49
Fidelity	nm_fid	2.23	1.22	0.47	5.19
Outcome	nm_out	3.55	1.00	1.00	6.00

Table: 4

Variables after calibration					
Variable	Name	Mean	Std.dev	Min	Max
Motivation					
Hedonic	fsm_hedonic	0.48	0.30	0.01	1.00
Product variety	fsm_prod_var	0.52	0.29	0.01	0.99
Review and Ratings	fsm_rev_rat	0.50	0.31	0.01	1.00
Convenience	fsm_conv	0.51	0.30	0.00	0.99
Impulsiveness	fsm_impul	0.51	0.30	0.01	1.00
Service quality	fsm_serq	0.49	0.30	0.01	1.00
Price	fsm_price	0.50	0.31	0.01	0.99
Information seeking	fm_info	0.52	0.30	0.00	1.00
Social Influence	fms_si	0.50	0.31	0.01	0.99
Logistics	fsm_log	0.49	0.29	0.01	0.99
Barriers					
In person	fsm_in_person	0.51	0.30	0.01	0.98
Risk	fsm_risk	0.49	0.31	0.01	1.00
Delivery	fsm_del	0.49	0.32	0.02	0.99
Fidelity	fsm_fid	0.40	0.32	0.02	0.99
Outcome	fsm_out	0.40	0.28	0.01	1.00

The result yields the study's independent variables, eliminating redundant information (Hair, Black, Babin, Anderson, & Tatham, 2006) [10]. With those variables, the fsQCA identifies what combination of conditions drives to the positive outcome (actual purchase behavior) and what combination of barriers drives to the negative outcome (absence of actual purchase behavior).

3.4 fsQCA calibration

The transformation of data into fuzzy sets is critical, because results strongly depend on the calibration. Original variables are uncalibrated, and therefore these variables' values are meaningful in relation to each other. Researchers must calibrate fuzzy sets according to the degree of membership that corresponds to theoretical constructs (Ragin, 2008b) [17]. This study includes two kinds of variables: the motivations and barriers variables from the PCA, and frequency of online food ordering. The values of the former correspond to the PCA's component scores. Thereby, data-dependent calibration is adequate for these variables, by using the median as the crossover point and calculating 90% and 10% percentiles for the levels of full membership and non-membership respectively. As for frequency of online ordering, upon inspection of the scale (from 1 to 7), the value 2 meets the non-membership limit (none or just one order), 4 fits the cross-over point (one order a month), and 5 meets the full-membership limit (one order per week). Table 3 shows the descriptive statistics of all variables before and after the calibration.

4. Discussion of the results

4.1 Principal component analysis

The PCA return 8 and 4 components for motivations and barriers respectively, using varimax rotation for both. PCA of motivations shows significant Bartlett's Test of Sphericity (df=445), KMO=0.95, and explains 76.89% of the variance. PCA of barriers also returns a significant Bartlett's Test of Sphericity (df = 69), KMO = 0.78 and explains 66.42% of the variance. Fig. 1 shows the final analysis model and the names of the factors considering the variables with higher components for each factor.

4.2 fsQCA analysis

fsQCA comprises two analyses. Table 4 shows intermediate solution to both. The first analysis considers combinations of motivations as conditions, and purchase frequency as outcome. The codification of cases in the truth table eliminates possible combinations with less than 3 cases (less than 2% of the total) and the consistency cutoff is 0.90. Results indicate that intermediate solution contains 10 combinations of conditions. Consistency levels are higher than 0.75 above the limit of 0.74 that Ragin (2008b) [18] proposes for a model to be informative (Woodside, 2013) [27]. Furthermore, all consistency levels for every condition are higher than 0.81.

After the observation of the conditions, some interesting results arise. First, all combinations are complex, which means that no single motivation is sufficient for purchase experience. This implication questions the results of many

previous studies that divide customers in typologies in which just one motivation represents each typology (Brown *et al.*, 2003; Rohm & Swaminathan, 2004) [5]. Besides, none of the casual recipes contains all the motivations appearing in the literature review. Second, Table 4 shows that convenience appears in every condition, confirming that convenience is

still the main motivation to order online; without convenience, no online purchase experience is possible. This result is consistent with most studies (Childers *et al.*, 2001; Darian, 1987). Fig. 2 shows that most of the cases are in the lower right side of the plot, which reflects the necessity of the condition.

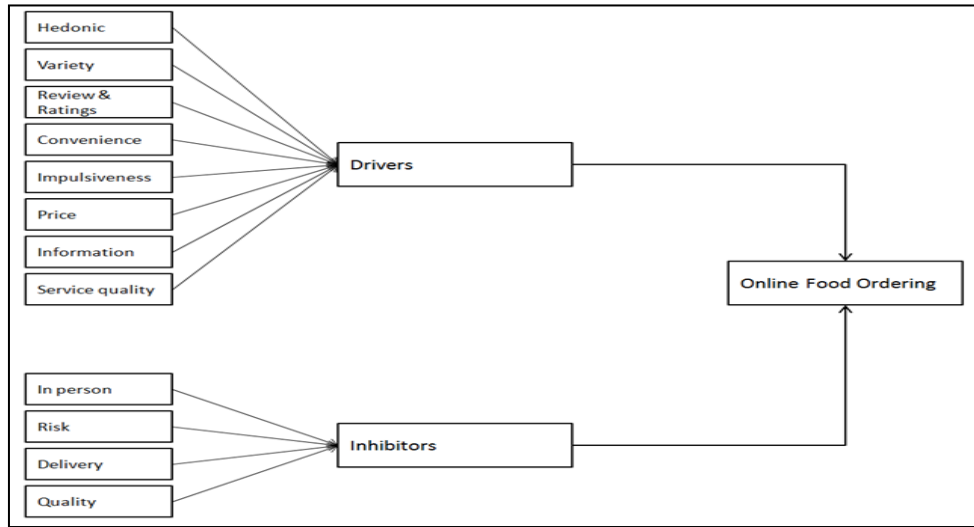


Fig 1: Research model and hypothesis.

Third, some solutions include only the negated form of a motivation. This result means that such motivation is no longer leading to online food ordering. This finding suggests the existence of an opportunity for restaurants that might concentrate their efforts on other characteristics of the online food ordering process. For instance, according to the results, while variety and convenience are always positive in the conditions, the fact that price is always negative in both solutions is remarkable. Therefore, price is not a motivation anymore for consumers in online food ordering rather offers and discount is a motivation for consumers. Finally, Fig. 3 shows the XY plot of the condition with the highest consistency of the intermediate solution (X axis) versus the outcome (Y axis). The distribution of the sample in the XY graph shows that this condition is a sufficient condition, because most of the cases are in the upper left quarter of the graph.

The second analysis considers combinations of barriers like conditions, and negated purchase frequency, like outcome. The codification of cases in the truth table deleted possible combinations with no occurrences (12.89% of cases) and the consistency cutoff was 0.89. As shown in Table 4, the solution consistency is 0.85 and solution coverage is 0.74. In

this case, only one condition risk appears in the casual receipt for refusal to order online. The other two barriers (delivery and delivery issues) are not present in the conditions, so these barriers are not truly barriers to online food ordering, at least for consumers with experience. Interestingly enough, despite the high levels of Internet literacy and advances in Internet security, risk is still a threat for e-commerce adoption, even among shoppers that have previous experience buying online. The food startups should focus on increasing consumers' perception of security. Also, since all the food startups are fundamentally providing the same service, the startup needs to focus on innovative ideas such as consumer customization or incentives to increase the traffic on their apps or websites.

5. Conclusion

This study investigates the drivers and inhibitors of online food ordering using fsQCA. The results of the analysis let to accomplish the main objectives of the research. On the one hand, this study contributes to the study of motivations and barriers from a theoretical point of view because the study compiles the drivers and inhibitors of online food ordering from prior literature. No other compilation adds so many factors combining drivers and barriers to the analysis.

Table 4: Results of the analysis of motivation and barriers.

Motivations				
Intermediate solution				
Outcome	Conditions	Raw cov.	Unique cov.	Cons.
fspur_exp	fsm_rev_rat*fsm_conv* ~ fsm_hed*fsm_var	0.40	0.01	0.81
fspur_exp	~fsm_price*fsm_rev_rat*fsm_conv*fsm_var	0.41	0.01	0.82
fspur_exp	fsm_info*fsm_conv* ~ fsm_servq*fsm_var*fsm_hedonic	0.33	0.00	0.84
fspur_exp	fsm_info* ~ fsm_price*fsm_conv* ~ fsm_servq*fsm_var	0.34	0.01	0.85
fspur_exp	fsm_info*fsm_rev_rat*fsm_conv*fsm_var*~fsm_hedonic	0.35	0.01	0.85
fspur_exp	fsm_info* ~ fsm_price* ~ fsm_servq*fsm_conv*fsm_hedonic	0.32	0.02	0.85
fspur_exp	~fsm_rev_rat*fsm_conv*fsm_imp*fsm_var*fsm_hedonic	0.32	0.01	0.85

fspur_exp	fsm_info* ~ fsm_rev_rat*fsm_conv*fsm_var*fsm_hedonic	0.32	0.00	0.86
fspur_exp	~fsm_info* ~ fsm_price*fsm_conv*fsm_rev_rat*fsm_hedonic	0.32	0.02	0.86
fspur_exp	~fsm_info* ~ fsm_price*fsm_conv*fsm_rev_rat*fsm_hedonic*fsm_servq	0.32	0.01	0.87

Sol. coverage	Sol. consistency	Freq.cutoff	Consistency cutoff
0.60	0.78	3.00	0.90

Barriers					
Intermediate solution					
	Outcome	Conditions	Raw cov	Unique cov	Cons
	~fspur_exp	Fsnm_risk	0.67	0.67	0.82

Sol. coverage	Sol. consistency	Freq.cutoff	Consistency cutoff
0.74	0.85	89.00	0.82

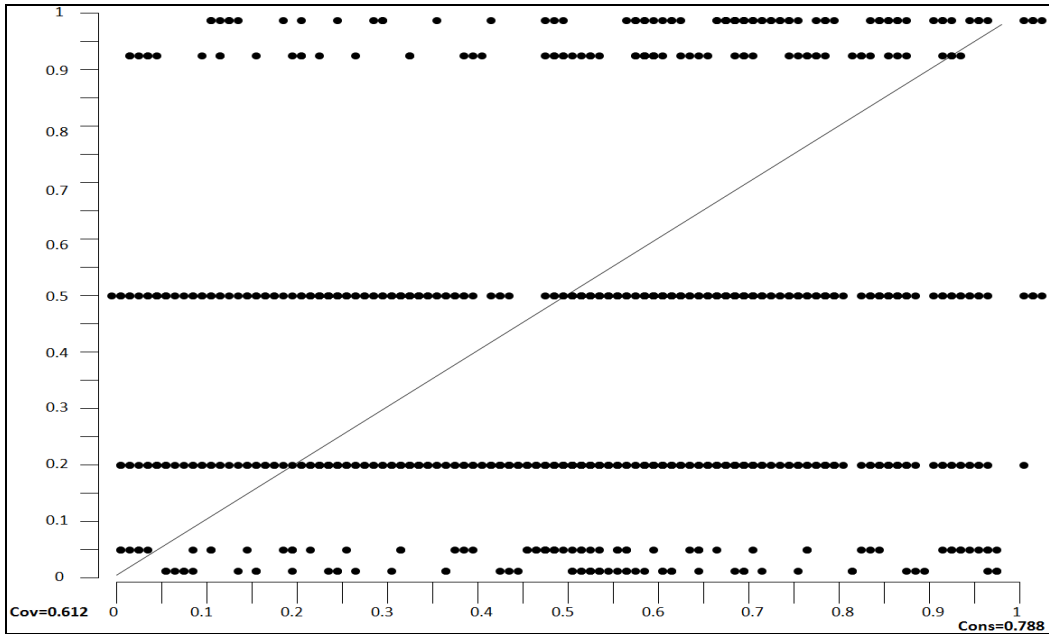


Fig 2: XT plot. Convenience (x) versus online food ordering (y)

Furthermore, the analytical approach also contributes to a new understanding of the study of motivations, because this

study is the first research on this topic that employs fsQCA and provides casual implications from the results.

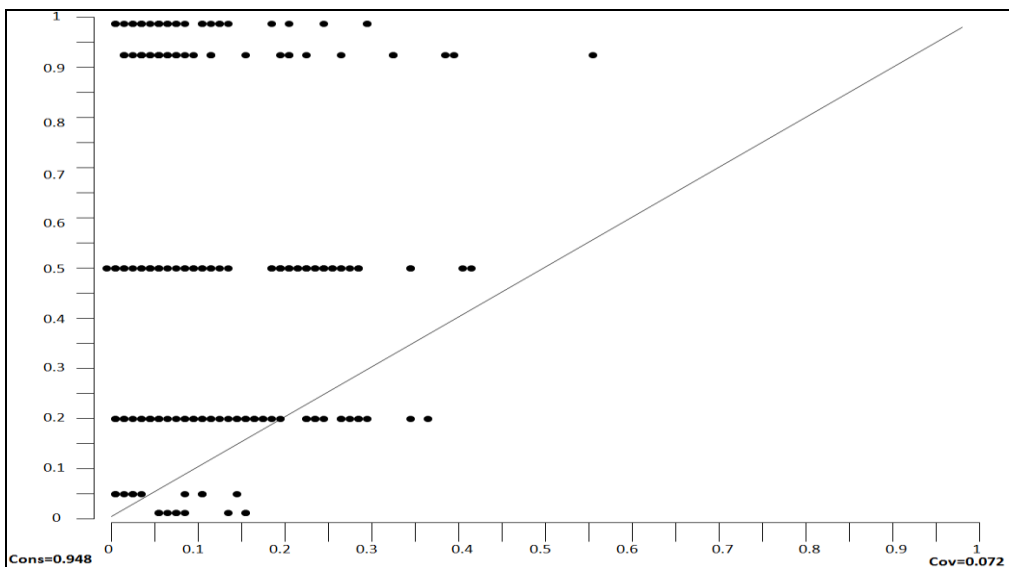


Fig 3: XY plot. Higher consistency condition (~fsm_info* ~ fsm_price*fsm_conv*fsm_rev_rat*fsm_hedonic*fsm_servq) versus online ordering (fspur_exp).

Four main implications arise for restaurants and food start-ups from the results. First, restaurants/food start-ups have to keep in mind that no single motivation drives consumers to order food online, but some combinations of motivations do. Therefore, they must satisfy these motivations in their product offering if they wish to fulfill potential shoppers' needs. Second, consumer motivations are evolving. Convenience is still a necessary condition to order online, but other conditions, such as price, do not lead customers to shop online. Since the restaurants price will be same across all mobile platform, offers in the form of discounts and cash backs are vital for consumers. Third, shoppers perceive that risk is the only true barrier when they consider whether they order online or not. Lastly, consumers look out for negative reviews more as compared to positive reviews. Restaurants must reach out to consumers who have provided negative reviews and address their concern. The main limitation of the research lies in the experience of the respondents from the sample. This limitation opens an opportunity for future research, not only to compare the results with non-experienced consumers, but also to apply again fsQCA with purchase intention as outcome.

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