Consumer Behavior in Grocery Delivery Apps

Submitted in partial fulfillment of the requirement for the award of the Degree of

Master of Business Administration (Analytics)

By

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CERTIFICATE

This is to certify that the Dissertation titled "**Consumer Behaviour in Grocery Delivery Apps**" is a bonafide record of the work carried out by **Mr. Suraj Kumar** under my guidance and supervision towards partial fulfillment of the requirement for a Dissertation for awarding the degree of **Master of Business Administration (Analytics)**, at the Indian Institute of Management Kashipur.

This work has been duly completed and has not been submitted anywhere else for the award of any degree or diploma.

Material wherever has been borrowed has been duly acknowledged.

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Abstract

The way shopping was done earlier is completely changed. Anything you want to buy, you get it delivered right at your door. Grocery delivery apps are taking over the retail business, especially after the covid outbreak, and this habit is seen to grow day by day. A drastic shift is been seen particularly for the working class. The ease of ordering and doorstep delivery has made things way easier for the customer. Some prominent player in the retail business as Spencers, Big Basket, D-mart, etc has also incorporated online ordering and delivery. The penetration of these apps is mostly limited to metropolitan cities initially, but it has started expanding to tier 2 cities as well. The industry is expected to grow more and more. With new players coming in, the shift of customers is easy. In this dissertation paper, we are focusing on to found out the loyal customer base and how the loyalty of the consumer is getting affected. This will help the retail business retain their customer base and personalize themselves to meet the customer's expectations.

Consumer retention is very much important days. As there are many players in the market, customers find it easy to shift to another platform very easily. The paper focuses on the influence of consumer personality, the UI/UX of the platform that affects the Value Co-creation of the customer, and finally how they are affecting loyalty.

This not only helps the online retail business to retain their customers but also help them devise strategy and campaigns and loyalty programs to gain new customers as well.

Keywords: Consumer personality, Value Co-creation, Grocery Delivery Apps, UI/UX

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List of Abbreviations	
Abbr.	**Abbreviation(s), Abbreviated**
GDA	Grocery Deliovery Applications
UI	User Interface
UX	User Experience
CFA	Confirmatory Factor Analysis
B2B	Business to Business
B2C	Business to Customer
CAGR	Compunded Annual Growth Rate
OCEAN	Openness, Concientiousness, Extraversion, Agreeableness, Neurticism
Apps	Applications
USD	United State Dollar
COVID	Corona Virus Disease

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Chapter 1: Introduction

1.1 Introduction

There has been observed an unforeseen transformation in consumer behavior and buying patterns in the last few decades. The way people purchase is being happened has also evolved significantly. Consumers have now become an integral part and partial of the product development and their involvement also led to increased loyalty. Before making any product, the companies are primarily surveying to understand the requirement of the customers. Surveying is now an outdated method, with the ever-evolving consumer behavior, the marketer has now devised a new term of Value Co-Creation which is referred to as the collaborative effort put forward in the development of products, & services involving all the stakeholders. This has led to increased loyalty as the customer now has a sense of recognition and belongingness.

The social media community is a bold step forward in the field of value co-creation. From the one plus community to Airtel Black and many other options. Marketers are wringing loyalty from co-creation. There have been studies conducted in this context, but they have primarily focused on the B2B segment. There is still room to explore this concept further in the B2C segment. This brings us to the main point of our research: belongingness means different things to different people, which is why consumer personality entered the picture.

While investigating the relationship between consumer personality and value co-creation, we tend to capture their impact on brand loyalty and, ultimately, how this influences consumer purchasing behavior. We chose Indian Online Grocery Delivery Apps for the study because they are rapidly growing and have seen a lot of disruption in the last few years. We will begin by defining each of these terminologies, as defined by various researchers, and then look at the Indian grocery delivery apps industry.

Consumer buying behavior, also known as consumer behavior, is the study of various groups of customers, their personalities, social and economic aspects, and their behavior when they tend to buy a product that meets their needs. It is defined by Engel, Blackwell, and Mansard as the process of making decisions and putting them into action when purchasing goods or services for personal use or consumption. When we talk about consumer behavior, we also talk about personality, value co-creation, and loyalty. Furthermore, Peter F.Ducker has stated that a business is determined by the consumer, making it relevant to the study.

Companies no longer rely on consumer feedback to improve their products; instead, they involve consumers in the development process. The effort is now more preventive than corrective, thanks to social media communities. This results in increased brand loyalty. Many contributions, at various scales and levels of abstraction, have laid out how customers, along with firms and other actors, create value. Many researchers have provided evidence to support this claim. Value creation is no longer restricted to the manufacturing process but has become an integral part of consumer behavior as something that customers govern in the context of their consumption (Vargo and Lusch, 2004, 2008a; Gro nroos, 2008a, b; Strandvik et al.2012). This value co-creation is highly driven by the personality of customers.

In the context of consumer behavior, personality refers to the characteristics that reflect how an individual behaves in society or responds to his/her surroundings. These characteristics can have been termed sometimes as attributes, traits, and sometimes as qualities, factors, or mannerisms that vary from one person to other. Personality is an important dimension to study consumer buying behavior and an important parameter to understand its relationship with the co-creation

Further, this all leads to building loyalty towards the brand which highly affects the buying patterns. Brand loyalty can be defined as a consumer's aware or unaware decision to purchase a brand frequently. There are many reasons

a customer can be loyal to brands as high switching barriers, satisfaction, and a feeling of being involved or brand personality relating to their personality. Brand loyalty is also referred to as the extent to which the customer has faith in a specific brand which can be seen by his/her repeated purchases and positive mouth advocacy (Kotler & Keller, 2006; Kotler, et al., 2008).

1.2 Overview of the industry

The Indian online grocery market was worth USD 2.9 billion in 2020, and it is expected to grow at a compound annual growth rate (CAGR) of 37.1 percent between 2021 and 2028. As a result of changing consumer lifestyles, increasing urbanization, and a tech-savvy generation that prefers to buy products online, the market has gained significant traction in recent months. As disposable incomes rise and lifestyles become busier, people are increasingly turning to customizable and convenient online platforms for grocery shopping rather than walking down to the neighborhood vendors. Following the COVID-19 outbreak, people preferred online grocery delivery. Consumers are turning to online grocery shopping, which is not only convenient but also safer, as social distancing standards rise.

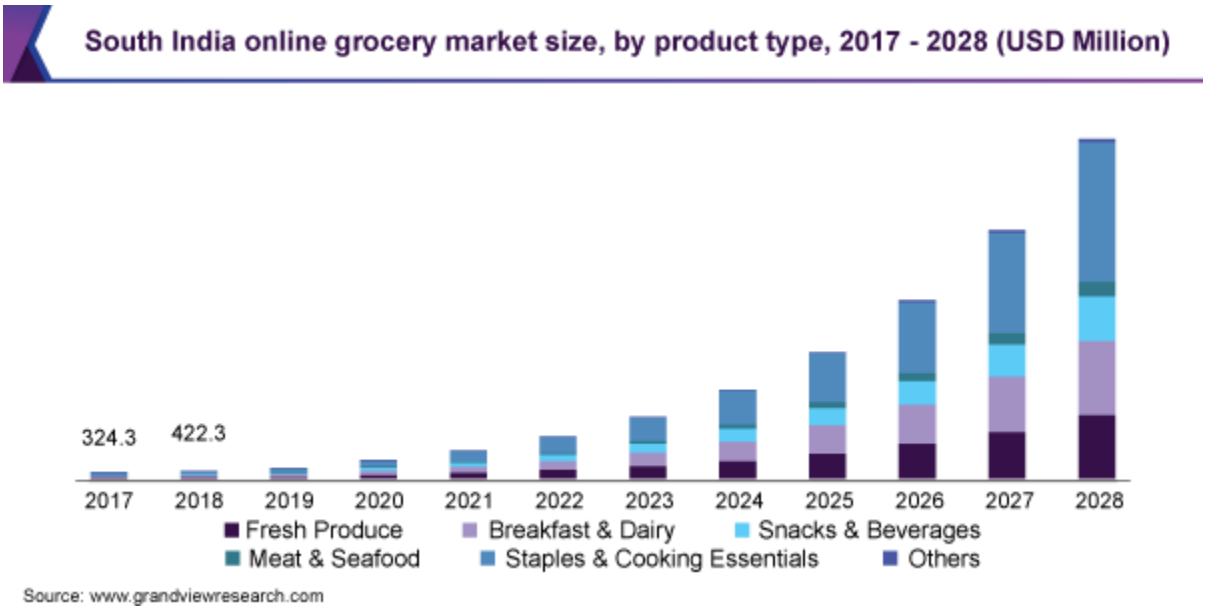

Fig 1: South India Grocery Market

India Online Grocery Market Report Scope

Report Attribute	Details
Market size value in 2021	USD 4.3 billion
Revenue forecast in 2028	USD 38.9 billion
Growth Rate	CAGR of 37.1% from 2021 to 2028
Base year for estimation	2020
Historical data	2017 - 2019
Forecast period	2021 - 2028
Quantitative value	Revenue in USD million/billion and CAGR from 2021 to 2028
Report coverage	Revenue forecast, company ranking, competitive landscape, growth factors, and trends
Segments covered	Product type, payment method, region
Regional Scope	South India; North India; West India; East India
Country Scope	India
Key companies profiled	Amazon India Pvt. Ltd.; Godrej Nature's Basket Ltd.; Grofers India Pvt. Ltd.; Paytm E-Commerce Pvt. Ltd. (Paytm Mall); Reliance Retail Ltd. (Reliance Fresh); Spencer's Retail; Supermarket Grocery Supplies Pvt. Ltd. (BigBasket); UrDoorstep eRetail Pvt. Ltd.
Customization scope	Free report customization (equivalent up to 8 analysts working days) with purchase. Addition or alteration to country, regional & segment scope.
Pricing and purchase options	Avail customized purchase options to meet your exact research needs. Explore purchase options

Fig 2: India Online Grocery Market

1.3 Significance of the study

There have been studies made on consumer personality and brand loyalty, value co-creation, and loyalty, user engagement but not much has been explored in terms of value co-creation and consumer personality. This study will explore all these facets, their interdependencies. Further, value co-creation has majorly been studied in the

B2B segment. This study will explore the B2C keeping the research in the Grocery Delivery Apps which is a rapidly growing industry, especially after the covid outbreak.

1.4 Problem Statement

The prime focus for research studies understanding the loyalty trends of consumers in the grocery delivery apps that have been constrained to the B2B model while an in-depth analysis or understanding of the same requires a B2C intervention. This requires research in the field of consumer behavior to focus on the fact that our society is consumer-driven. This implies that the entire product lifecycle, product development, strategies are governed by the needs of consumers to win their loyalty towards the brand. Hence, the need to understand the significance of value cocreation regarding the B2C model becomes critical to find underlying factors for determining the buying pattern or behavior of consumers in the online grocery delivery industry.

Further, drawing from the same, in the last few years we have seen a revolution in the retail industry shifting towards online ordering and delivery platforms. From the ease of access to data to the digital revolution, the retail industry has evolved to be app-based. While the demands and product development have been driven by the consumer segment. Because there has been a significant shift in grocery buying from offline to the app-based system after the covid outbreak, it becomes only significant to understand the psychology or factor driving this disruption. Hence, understanding the personality traits, factors driving value cocreation, user engagement becomes significant in understanding the loyalty of consumers while also exploring the reasons why major players in the market lost their consumer base.

Furthermore, research has undertaken correlation studies with factors being independent while an understanding of the inter-dependency of variables on factors among each other also becomes significant. Considering an isolated model for factor evaluation in present times of collaboration deems the research to be biased regarding

findings. Where organizations are collaborating to the point of sharing their intellectual property, the extent of collaboration now transverses to a much deeper dimension than a decade before. Therefore, understanding the inter-dependency of variables or factors impacting consumer buying behavior also becomes significant.

1.5 Research Objective

The research aims to achieve the following objectives

- To explore the relationship between Consumer Personality, User Engagement, Value Co-Creation, and Loyalty
- To evaluate the impact of Value Co-Creation, Consumer Personality, UI/UX, and Consumer Loyalty to look at how they affect the buying behavior in the Grocery Delivery Apps
- To find out the loyal customer segments and how they can be retained

Chapter 2: Literature Review

The literature survey was multidisciplinary, covering topics such as value co-creation, customer personality, and the mediating role of loyalty. The literature review begins with a discussion of the theoretical foundations of personality traits, brand loyalty, user engagement, and value co-creation, and then moves on to the relationships between all of the variables. The grocery delivery apps are the specific service industry chosen for this study, and literature on the dimensions of customer perceived value of online grocery delivery apps are reviewed.

Personality trait

Personality is defined as a real person by Gordon Allport (1897-1967), while a more specific definition of personality (Yi Lin, 2010) is organized physiological systems that create a characteristic pattern of an individual's behavior/thoughts, and feelings (Allport, 1961). Traits can also be defined as preferences for adapting stable modes of behavior, love, or intellect. According to Rajagopal (2006), personality traits are determined by multidimensional factors such as attitude, behavior, appearance, demographic characteristics, and beliefs.

McCrae et al. (1986) classified personality traits into five major factors or categories, known colloquially as the Big Five Model. Extroversion, agreeableness, conscientiousness, neuroticism, and openness are among them. This model has been shown in studies to predict more accurate behavior and will thus be considered in this study as well.

Brand loyalty

Jacoby and Olson (1970) defined brand loyalty as the result of long existence purchase behavior that was not random by an individual who considers more than one brand. Further, behavioral loyalty is said to be because of the repeated purchase of a brand (Smith, 2003). In previous research, researchers measured brand loyalty as an

act of repurchase. But nowadays, some researchers state that to measure brand loyalty, the best possible way is to measure effective loyalty (Bennett and Rundle-Thiele, 2000).

Value co-creation

Both producers and customers are considered "actors" in the engagement for value co-creation (Finsterwalder, 2016). According to another definition, "value-creation mechanisms are collective processes that generate common benefits that are shared by all alliance partners" (Lavie, 2007, p. 1191). Bowman and Ambrosini (2000, p. 5) state that the new use-value is created by the collaborative actions of organizations and customers in the B2B segment. When discussing value co-creation, it is stated that "customer value co-creation not only leads to improvements in innovation and identifying customer needs, but it also increases the level of customer loyalty and satisfaction (Moise et al., 2020)." Value co-creation is defined as a mutual process based on collaboration, and similarity that yields a new value for the organization both materially and symbolically (Gummesson et al., 2014).

Relationships between variables

Relationship between consumer personality and loyalty

Matzler et al. (2006) discovered in their study the relationships between the product's personality traits of openness and extroversion and hedonic value, brand affection, and brand loyalty. According to the study's findings, openness and extroversion as personality traits have a positive correlation with a brand or product loyalty with hedonic value.

Relationship between value-creation and brand loyalty

Mariyudi (2017) determined that the organization must motivate its customers to participate in an efficient value co-creation process. More effort is required to help customers with higher collectivism and power distance value

orientations visualize the economic value of their participation. Customers who believe this is a long-term relationship should be more motivated to take advantage of their co-creation opportunities.

Encouragement of the creation of relationship value increases the utility of value co-creation behavior and creates a competitive advantage. Given that the majority of the participants are Samsung users, this can be interpreted as the participants' gratitude to Samsung, which is known for its high levels of customer loyalty and satisfaction. In this case, a knowledgeable consumer who has a long-term relationship with the company, similar to a long-term relationship with friends and online acquaintances, may become a professional consumer.

Conclusion

From the above literature review, we have seen that the researchers have explored each of the relations individually. There is still a need to propose a model which related all these variables and hence shows the effect on the loyalty of the customers. We in this study will make an effort to build a model that considers these variables and their relationship with each other and with loyalty.

Chapter 3: Conceptual Model & Hypotheses

3.1 Conceptual Model

After defining the objective and research objective, we need to formulate a conceptual model which will act as a foundation for this study. Also to add once we have defined the factors, we also need to define attributes to measure them. To measure consumer personality, we have considered the OCEAN model and to capture User Engagement, attributes such as Aesthetic, Reward, Perceived Usability, Focused Attention has been considered based on the previous studies.

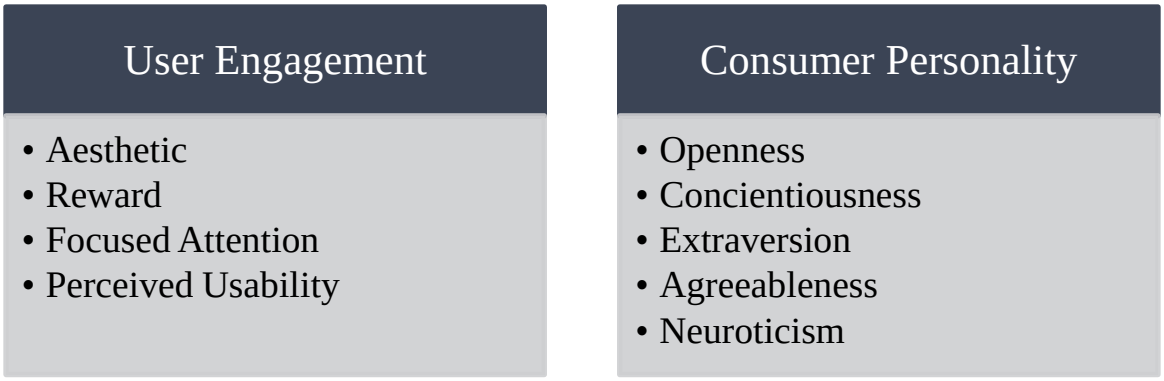

Fig 3: Attributes

The conceptual model will look as

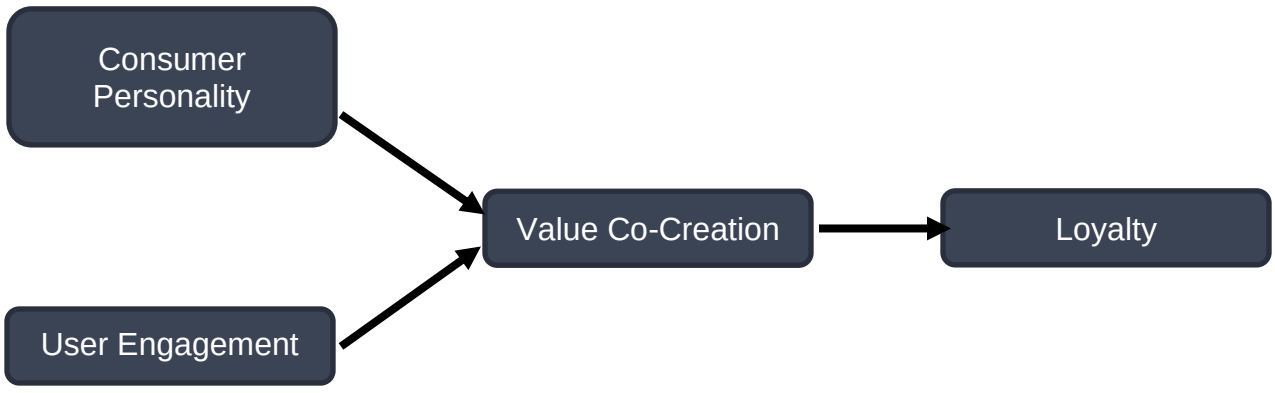

Fig 4: Conceptual Model

3.2 Hypotheses

The following Hypothesis can be developed based on different factors:

Loyalty vs Consumer Personality

H0: Consumer Personality has a significant effect on Loyalty

H1: Consumer Personality doesn't have a significant effect on Loyalty

Loyalty vs User Engagement

H0: User Engagement has a significant effect on Loyalty

H1: User Engagement doesn't have a significant effect on Loyalty

Loyalty vs Value Co-creation

H0: Value Co-creation has a significant effect on Loyalty

H1: Value Co-creation doesn't have a significant effect on Loyalty

Chapter 4: Methodology

4.1 Method

This research will adopt a combination of qualitative and quantitative research methodologies. The findings and evidence presented in this research will be achieved by adopting methodologies suited for the study of the relation between personality, co-creation, and loyalty. For the study, we will undertake in-depth interviews with 10-15 participants who are mid-level managers, senior managers in the retail industry to gain insights. Further, these interviews will be conducted over 3-4 months which will be followed by a focused group discussion to validate the findings of individual interviews. The analysis of the data obtained from qualitative methodology will be based on open coding approach which will lead to the recognition of issues and central themes to draw comparisons and conclusions.

For this, a survey will be floated to record the data about each of the factors based on a 5-point Likert scale. The survey will be conducted individually and accordingly, the findings will be recorded and summarized in alignment with the objective of the study. For the reliability and validation of questionnaires, a reliability analysis (Cronbach's alpha) value will be evaluated.

Further, we will also incorporate confirmatory factor analysis (CFA) to check the contribution of each questionnaire on their respective factor.

The analysis of the data obtained was based on the correlation and regression analysis as adopted by Long-Yi Lin, 2010, in their paper “The relationship of consumer personality trait, brand personality, and brand loyalty: an empirical study of toys and video games buyers” which led to the recognition of issues and central themes after drawing conclusions and comparisons from repeated listening of the interviews along with avoiding overlaps and contrasts among the data.

We will be using correlation analysis and a multiple regression model with brand loyalty as a dependent variable

and personality and co-creation, user engagement as an independent variable followed by model diagnosis.

5.2 Measurement

To measure the factors, a survey was conducted with questionnaires about the attributes of each variable. The same is shown in a table with their source

Code	Statement	Source
Openness		Donnellan et al.(2006); Goldberg(1999)
OPN1	I enjoy imagining new and different ideas	
OPN2	I experience difficulty in comprehending abstract ideas	
OPN3	I am not keen to engage myself in intellectual discussions.	
OPN4	I do not enjoy daydreaming	
Conscientiousness		
CONS1	I get chores done the right way	
CONS2	I like to keep things in order	
CONS3	I often forget to put things back in their proper place	
CONS4	Many a time, I mess up things	
Extraversion		
EXT1	I enjoy partying frequently	
EXT2	I enjoy talking to new people, who are different from me	
EXT3	I do enjoy socializing	
EXT4	I enjoy going out to help people in need	
Agreeableness		
AGR1	I sympathise with others frequently	
AGR2	I feel for others	
AGR3	I don’t care what others are really doing	

AGR4	I go with the majority	
Neuroticism		
NEU1	I experience frequent mood swings	
NEU2	I get upset easily	
NEU3	I am relaxed most of the time	
NEU4	I seldom feel blue	
Aesthetic appeal		O'Brien et al. (2018; Paula Bitrián, Isabel Buil, Sara Catalán, Enhancing user engagement: The role of gamification in mobile apps, Journal of Business Research, Volume 132, 2021
AE1	This app is attractive	
AE2	This app is aesthetically appealing	
AE3	This app appeals to my senses	
Reward		
REW1	Using this app is worthwhile	
REW2	My experience is rewarding	
REW3	I feel interested in this experience	
Focused attention		
FA1	I lose myself in this experience	
FA2	The time I spend using this app just slips away	
FA3	I am absorbed in this experience	
Perceived usability		
PU1	I feel frustrated while using this app	
PU2	I find this app confusing to use	
PU3	Using this app is taxing	
Value Co-creation		Nysveen &Pedersen (2014))
C1	I would be highly engaged when using this app	
C2	I could spend a long time using this app	
C3	I would be totally plugged in using this app	
C4	I would express my personal needs to this app	

C5	I could participate in decisions about how this app offers its services	
C6	I would find solutions to my problems together with this app	
Consumer Loyalty		Bhattacherjee (2001); Shao et al. (2018); Cho et al. (2019)
B1	I have intention to recommend the food delivery application to others	
B2	I have no intention to switch over to other food delivery application	
B3	I like to use the services provided by the grocery delivery app	
B4	I will prefer new services if offered by the app	
B5	I prefer this grocery delivery app over other apps	
B6	I prefer this grocery delivery application over other applications	

Table 1: Survey Questionnaires

Chapter 5: Data Analysis

5.1 Demographics

A total of 200 responses were received through the online survey. This section demonstrates the demographic characteristics of the respondents.

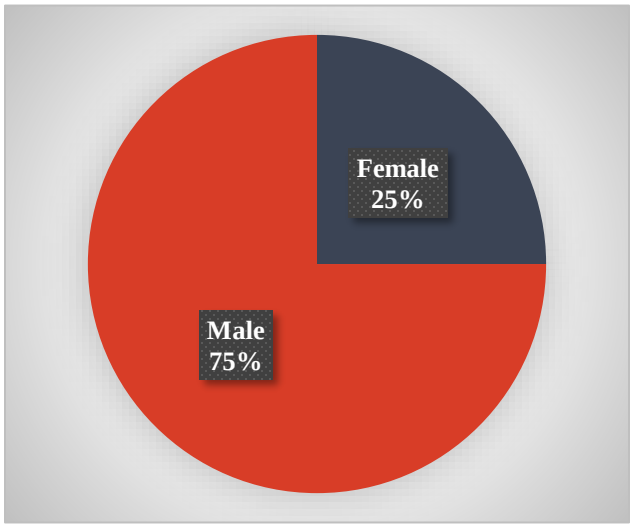

Fig 5: Gender

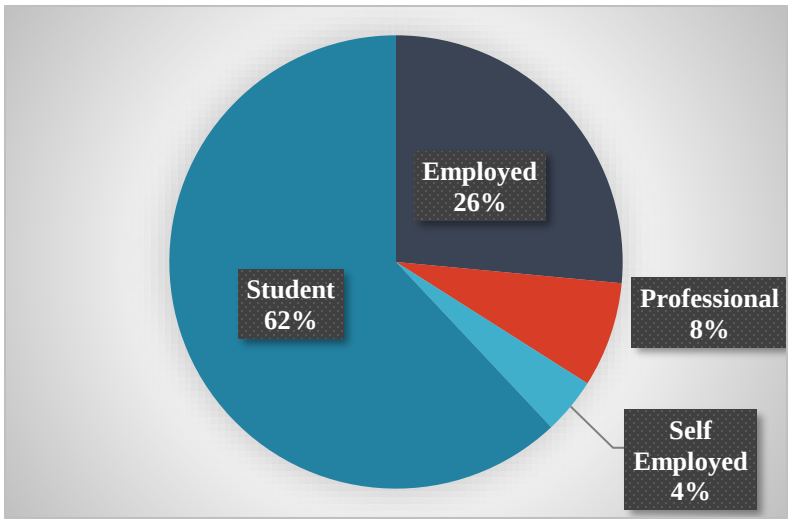

Fig 6: Occupation

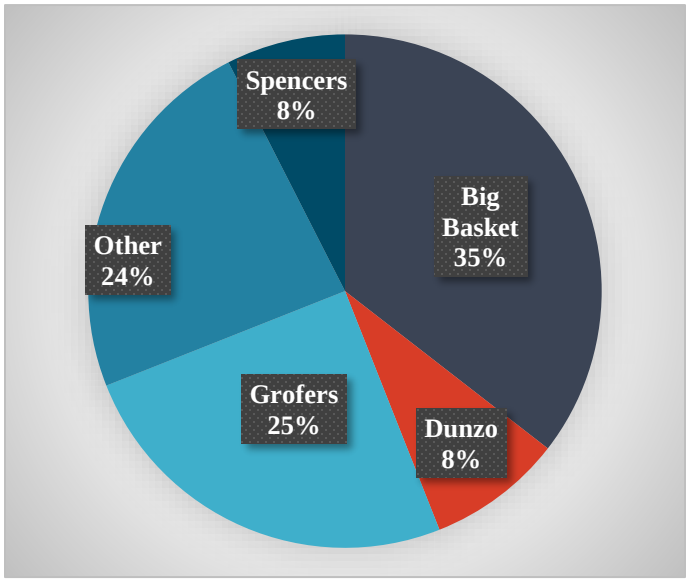

Fig 7: GDA

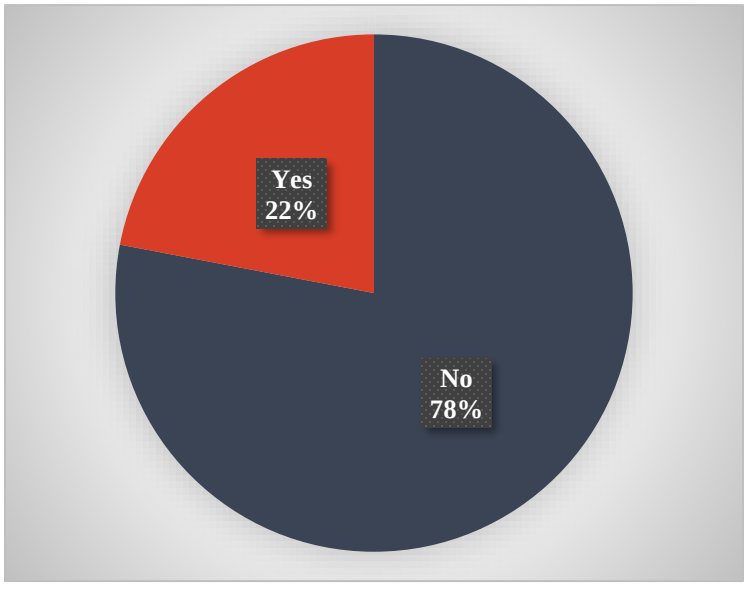

Fig 8: Opting Premium Services

Age	
18-24	38.50%
25-30	56.50%
31-40	2.50%
40+	2.50%

Table 2: Respondents' Age

Education	
Doctorate	1.50%
Graduate	41.50%
High school	0.50%
Postgraduate	53.00%
Secondary high school	3.50%

Table 3: Respondents' Education Level

Family Income	
1000001 -1250000	6.00%
1250001-1500000	7.00%
500001-750000	23.50%
750001-1000000	13.50%
Above 1500000	21.00%
Less than 500000	29.00%

Table 4: Respondent's Family Income

Frequency of Buying on GDA	
3-4 times a week	9.00%
At least once every day	4.00%
Once a month	53.00%
Once a week	19.00%
Once in 15 days	15.00%

Table 5: Respondents' Frequency of Buying over GDA

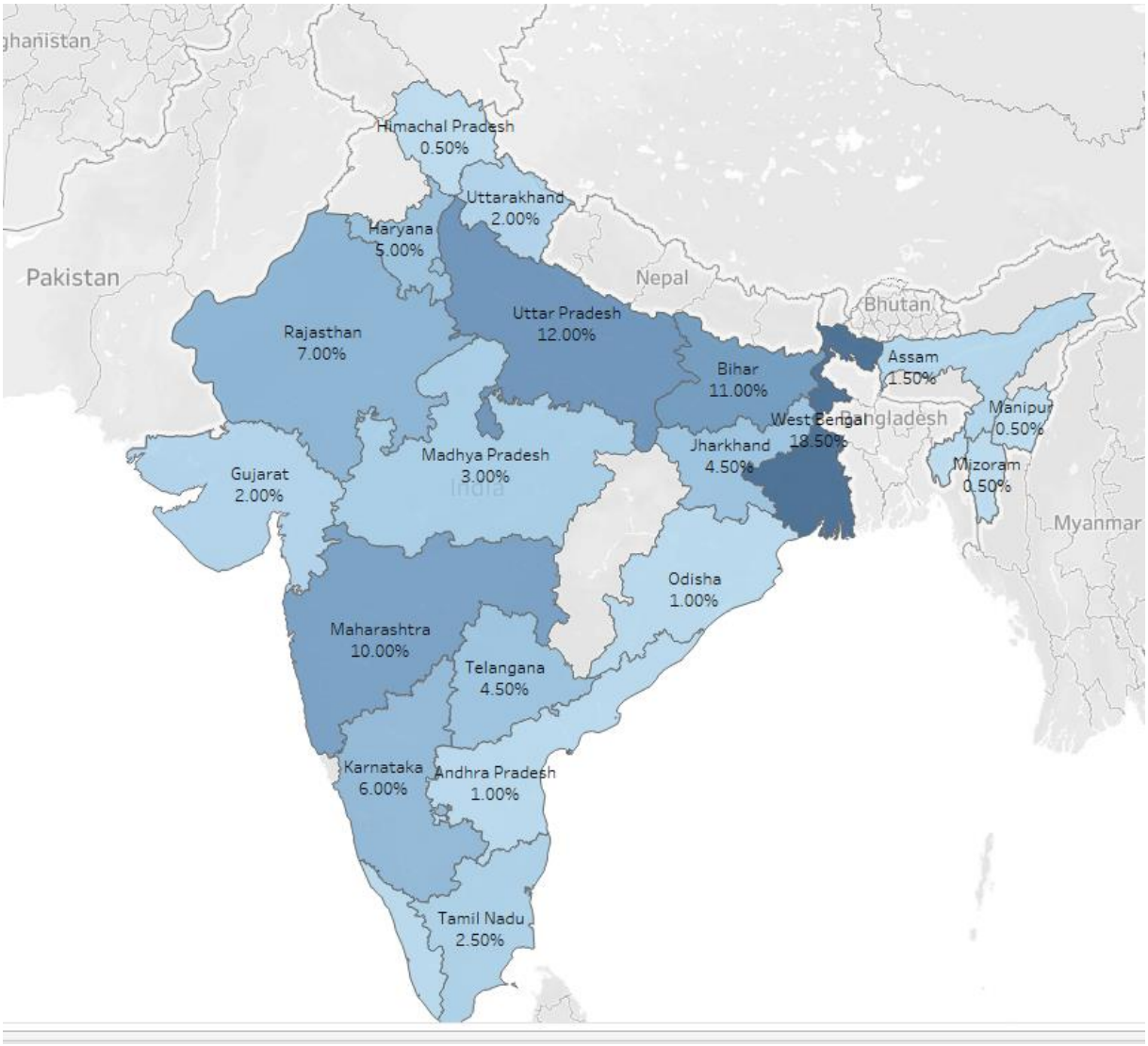

Fig 9: Respondents' Location

5.2 Questionnaires Response

This section demonstrates the responses of respondents to the questionnaires.

Aesthetic	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
This app is attractive	3.50%	4.50%	32.50%	51.50%	8.00%
This app is aesthetically appealing	3.00%	7.50%	37.50%	43.50%	8.50%
This app appeals to my senses	2.00%	8.00%	40.50%	42.00%	7.50%

Table 6: Responses to Aesthetic

Reward	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Using this app is worthwhile	2.50%	5.00%	28.50%	54.50%	9.50%
My experience is rewarding	2.00%	5.50%	34.50%	47.00%	11.00%
I feel interested in this experience	2.50%	7.50%	40.50%	39.00%	10.50%

Table 7: Responses to Reward

Focused Attention	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I lose myself in this experience	11.50%	34.50%	44.00%	1.50%	9.50%
The time I spend using this app just slips away	10.00%	37.50%	35.50%	15.00%	2.00%
I am absorbed in this experience	10.50%	28.00%	44.00%	15.00%	2.50%

Table 8: Responses to Focused Attention

Perceived usability	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel frustrated while using this app	17.50%	54.50%	20.00%	5.50%	2.50%
I find this app confusing to use	19.50%	54.00%	18.50%	7.50%	0.50%
Using this app is taxing	14.00%	45.00%	29.00%	8.50%	3.50%

Table 9: Responses to Perceived Usability

Value Co-creation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I would be highly engaged when using this app	5.00%	21.50%	46.00%	23.00%	4.50%
I could spend a long time using this app	10.50%	35.50%	37.00%	14.00%	3.00%
I would be totally plugged in using this app	10.50%	34.50%	39.00%	12.50%	3.50%
I would express my personal needs to this app	7.50%	22.00%	39.50%	25.50%	5.50%
I could participate in decisions about how this app offers its services	6.00%	18.50%	40.50%	28.00%	6.00%
I would find solutions to my problems together with this app	8.50%	14.00%	46.50%	26.50%	4.50%

Table 10: Responses to Value Co-creation

Consumer Loyalty	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I have intention to recommend the food delivery application to others	4.00%	6.50%	32.50%	47.50%	9.50%

I have no intention to switch over to other food delivery application	3.50%	25.50%	44.50%	21.00%	5.50%
I like to use the services provided by the grocery delivery app	1.00%	6.50%	34.00%	51.00%	7.50%
I will prefer new services if offered by the app	1.00%	5.50%	30.00%	46.00%	17.50%
I prefer this grocery delivery app over other apps	2.50%	10.00%	42.00%	35.00%	10.50%
I prefer this grocery delivery application over other applications	2.00%	5.50%	40.50%	43.00%	9.00%

Table 11: Responses to Consumer Loyalty

Openness	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
I enjoy imagining new and different ideas	4.00%	6.00%	20.00%	52.00%	18.00%
I experience difficulty in comprehending abstract ideas	7.00%	36.50%	31.00%	20.00%	5.50%
I am not keen to engage myself in intellectual discussions.	14.50%	37.50%	27.50%	16.50%	4.00%
I do not enjoy daydreaming	11.00%	24.00%	38.00%	20.50%	6.50%

Table 12: Responses to Openness

Conscientiousness	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
I get chores done the right way	3.50%	7.50%	32.50%	42.50%	14.00%
I like to keep things in order	1.50%	7.50%	22.50%	50.00%	18.50%

I often forget to put things back in their proper place	9.50%	33.00%	25.50%	25.50%	6.50%
Many a time, I mess up things	8.50%	32.50%	32.50%	22.50%	4.00%

Table 13: Responses to Conscientiousness

Extraversion	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
I enjoy partying frequently	9.00%	24.00%	33.50%	26.50%	7.00%
I enjoy talking to new people, who are different from me	3.00%	13.00%	32.00%	39.00%	13.00%
I do enjoy socializing	6.00%	15.50%	31.00%	35.50%	12.00%
I enjoy going out to help people in need	2.50%	9.50%	29.50%	38.50%	20.00%

Table 14: Responses to Extraversion

Agreeableness	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
I sympathise with others frequently	2.50%	7.00%	27.00%	47.00%	16.50%
I feel for others	3.50%	5.50%	25.00%	45.00%	21.00%
I don’t care what others are really doing	8.50%	27.50%	42.00%	16.00%	6.00%
I go with the majority	8.00%	29.50%	46.50%	12.00%	4.00%

Table 15: Responses to Agreeableness

Neuroticism	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I experience frequent mood swings	11.50%	33.00%	31.50%	18.00%	6.00%
I get upset easily	9.50%	36.00%	35.00%	16.00%	3.50%
I am relaxed most of the time	4.00%	11.50%	42.50%	33.00%	9.00%
I seldom feel blue	5.00%	17.00%	53.50%	20.00%	4.50%

Table 16: Responses to Neuroticism

5.3 Model, Tests & Results

To test the reliability of the survey conducted, we used the Cronbach Alpha value. Empirically, a value greater than 0.7 is considered to be a good value to rely on. When we perform the test, we found that all the values of each factor were found to be greater than 0.7. The results are shown in the table below:

Factor	Cronbach's Alpha
Consumer Personality	0.861
User Engagement	0.788
Value Co-Creation	0.866
Consumer Loyalty	0.842

Table 17: Cronbach's Alpha

Followed by a reliability test, we also used Confirmatory Factor Analysis to test the impact of each of the questionnaires on their corresponding attributes. Empirically, a factor loading of greater than 0.5 is considered to be a good test. In our result of CFA, we found that each question has a sufficient impact on the corresponding factor and each of them has a factor loading greater than 0.5.

Aesthetic	Factor Loading
This app is attractive	0.929
This app is aesthetically appealing	0.956
This app appeals to my senses	0.923

Table 18: Aesthetic's Factor Loading

Reward	Factor Loading
Using this app is worthwhile	0.923
My experience is rewarding	0.936
I feel interested in this experience	0.945

Table 19: Reward's Factor Loading

Focused Attention	Factor Loading
I lose myself in this experience	0.912
The time I spend using this app just slips away	0.964
I am absorbed in this experience	0.962

Table 20:Focused Attention Factor Loading

Perceived usability	Factor Loading
I feel frustrated while using this app	0.941
I find this app confusing to use	0.928
Using this app is taxing	0.960

Table 21:Perceived Usability Factor Loading

Value Co-creation	Factor Loading
I would be highly engaged when using this app	0.926
I could spend a long time using this app	0.972
I would be totally plugged in using this app	0.997
I would express my personal needs to this app	0.973
I could participate in decisions about how this app offers its services	0.981
I would find solutions to my problems together with this app	0.952

Table 22:Value Co-creation Factor Loading

Consumer Loyalty	Factor Loading
I have intention to recommend the food delivery application to others	0.971
I have no intention to switch over to other food delivery application	0.921
I like to use the services provided by the grocery delivery app	0.939
I will prefer new services if offered by the app	0.957
I prefer this grocery delivery app over other apps	1.003
I prefer this grocery delivery application over other applications	0.964

Table 23:Consume Loyalty Factor Loading

Openness	Factor Loading
I enjoy imagining new and different ideas	0.815
I experience difficulty in comprehending abstract ideas	0.985
I am not keen to engage myself in intellectual discussions.	1.008
I do not enjoy daydreaming	0.979

Table 24:Openness Factor Loading

Conscientiousness	Factor Loading
I get chores done the right way	0.928
I like to keep things in order	0.880
I often forget to put things back in their proper place	1.026
Many a time, I mess up things	0.909

Table 25:Concientiousness Factor Loading

Extraversion	Factor Loading
I enjoy partying frequently	0.902
I enjoy talking to new people, who are different from me	0.983
I do enjoy socializing	0.999
I enjoy going out to help people in need	0.952

Table 26:Extraversion Factor Loading

Agreeableness	Factor Loading
I sympathise with others frequently	0.957
I feel for others	0.981
I don’t care what others are really doing	0.928
I go with the majority	0.900

Table 27:Agreeableness Factor Loading

Neuroticism	Factor Loading
I experience frequent mood swings	1.029
I get upset easily	0.955
I am relaxed most of the time	0.883
I seldom feel blue	0.900

Table 28:Neuroticism Factor Loading

To test the hypothesis, we have used a combination of Correlation Analysis and multiple regression models with Consumer Loyalty as our Dependent Variable and User Engagement, Consumer Personality and Value Co-creation as our Independent Variables, and some demographic variables ass our control variable. The results of the model have been shown below:

Figure - Heatmap depicting correlation between features

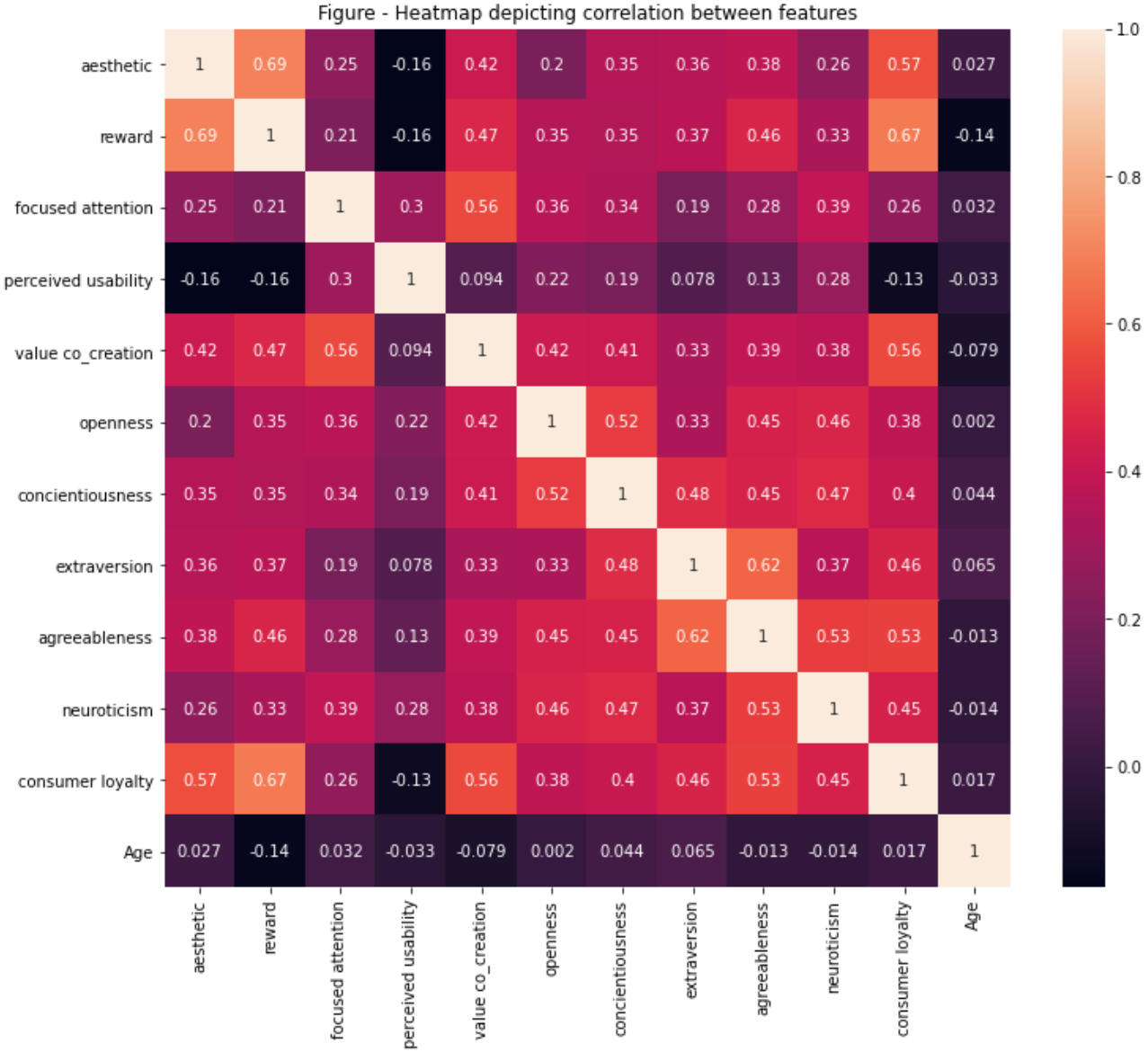

Fig 10: Correlation Heatmap

The correlation heatmap shows that Consumer Loyalty has a good correlation with aesthetic, reward, value co-creation, Extraversion, Conscientiousness, and Neuroticism attributes.

The regression model output is shown below with all the variables and then with only significant variables. Initially, build the model using consumer loyalty as our dependent variable and other attributes of User Engagement and Consumer Personality along with Value Co-creation and Demographic variables Age & Gender as Independent variables. After running the model for the first time, model 1 (Fig 11), we noted that variables named Reward, Perceived Usability, Value Co-creation, Neuroticism & Gender_Male were the significant variables. So, we regenerated the model using significant variables from model 1. Again, we noticed in model 2 that only Reward, Value Co-creation & Neuroticism has come out to be significant. So, we refined the model to build the final model, model 3 which satisfies the p-value conditions. Hence, only Reward, Value Co-creation & Neuroticism has come out to be significant.

Model:	OLS	Adj. R-squared:	0.615
Dependent Variable:	consumer loyalty	AIC:	173.0156
Date:	2022-03-30 14:39	BIC:	212.9929
No. Observations:	160	Log-Likelihood:	-73.508
Df Model:	12	F-statistic:	22.14
Df Residuals:	147	Prob (F-statistic):	2.79e-27
R-squared:	0.644	Scale:	0.15973

	Coef.	Std.Err.	t	P>|t|	[0.025	0.975]
aesthetic	0.0275	0.0629	0.4366	0.6630	-0.0968	0.1517
reward	0.3779	0.0699	5.4073	0.0000	0.2398	0.5159
focused attention	-0.0270	0.0495	-0.5452	0.5864	-0.1247	0.0708
perceived usability	-0.1639	0.0494	-3.3172	0.0011	-0.2616	-0.0663
value co_creation	0.2007	0.0578	3.4750	0.0007	0.0866	0.3149
openness	0.0288	0.0597	0.4818	0.6306	-0.0892	0.1468
concientiousness	0.0257	0.0715	0.3601	0.7193	-0.1155	0.1669
extraversion	0.0646	0.0541	1.1947	0.2341	-0.0423	0.1716
agreeableness	0.0695	0.0718	0.9681	0.3346	-0.0724	0.2114
neuroticism	0.1366	0.0641	2.1310	0.0348	0.0099	0.2633
Age	0.0091	0.0074	1.2273	0.2217	-0.0056	0.0238
Gender_Female	0.5916	0.3142	1.8832	0.0616	-0.0292	1.2125
Gender_Male	0.6120	0.3087	1.9827	0.0493	0.0020	1.2221

Omnibus:	1.387	Durbin-Watson:	2.069
Prob(Omnibus):	0.500	Jarque-Bera (JB):	1.021
Skew:	0.015	Prob(JB):	0.600
Kurtosis:	3.390	Condition No.:	383

Fig 11: Model 1-Regression Output with all variables

Model:	OLS	Adj. R-squared (uncentered):	0.985
Dependent Variable:	consumer loyalty	AIC:	190.5114
Date:	2022-03-30 14:39	BIC:	205.8872
No. Observations:	160	Log-Likelihood:	-90.256
Df Model:	5	F-statistic:	2053.
Df Residuals:	155	Prob (F-statistic):	1.18e-139
R-squared (uncentered):	0.985	Scale:	0.18676

	Coef.	Std.Err.	t	P>|t|	[0.025	0.975]
reward	0.5733	0.0483	11.8821	0.0000	0.4780	0.6687
perceived usability	-0.0682	0.0458	-1.4894	0.1384	-0.1588	0.0223
value co_creation	0.2280	0.0534	4.2722	0.0000	0.1226	0.3335
neuroticism	0.2716	0.0575	4.7274	0.0000	0.1581	0.3851
Gender_Male	0.0933	0.0779	1.1984	0.2326	-0.0605	0.2471

Omnibus:	2.951	Durbin-Watson:	2.083
Prob(Omnibus):	0.229	Jarque-Bera (JB):	2.848
Skew:	0.133	Prob(JB):	0.241
Kurtosis:	3.597	Condition No.:	14

Fig 12: Model 2-Regression Output with significant variables from Model 1

Model:	OLS	Adj. R-squared (uncentered):	0.985
Dependent Variable:	consumer loyalty	AIC:	189.3317
Date:	2022-03-30 14:39	BIC:	198.5572
No. Observations:	160	Log-Likelihood:	-91.666
Df Model:	3	F-statistic:	3405.
Df Residuals:	157	Prob (F-statistic):	1.36e-142
R-squared (uncentered):	0.985	Scale:	0.18766

	Coef.	Std.Err.	t	P>|t|	[0.025	0.975]
reward	0.5805	0.0482	12.0502	0.0000	0.4854	0.6757
value co_creation	0.2267	0.0525	4.3178	0.0000	0.1230	0.3304
neuroticism	0.2362	0.0505	4.6778	0.0000	0.1365	0.3360

Omnibus:	3.221	Durbin-Watson:	2.064
Prob(Omnibus):	0.200	Jarque-Bera (JB):	3.508
Skew:	0.066	Prob(JB):	0.173
Kurtosis:	3.713	Condition No.:	10

Fig 13: Model 3-Regression Output with significant variables

Chapter 6: Discussion

We started with the hypotheses of checking the influence of different factors on personality. As per the hypotheses, we understand to a certain extent, the null hypothesis is accepted only for attributes reward related to user engagement, neuroticism related to consumer personality, and value co-creation. The findings are aligned with previous findings as well quoted as "Customer value co-creation not only leads to improvements in innovation and identifying customer needs, but also it increases the level of customer loyalty and satisfaction (Moise et al., 2020)". The research paper by Francisco-JoséCossío-Silva,2016 found that value co-creation has a significant impact on attitudinal and behavioral loyalty

As per Frederick F. Reichheld and W. Earl Sasser, Jr., most loyal customers for a company are most profitable once, which is very well documented in "Quality Comes to Services" (HBR September–October 1990). Rewards can build customer loyalty and that is another finding we have in our model.

Neurotic personalities are generally are shy and stay-aways from groups. We very well know that reference groups do have an effect on consumer loyalty and thus we can say because of this trait, they are hard to get influence and thus can be a potential loyal customer. Hsin-Hui"Sunny" Hu, 2018 also found that reward programs act as a good driver of loyalty.

Though we have added some demographic variables as our control variables they were found to be significant and hence influence the model.

Chapter 7: Managerial Implications & Limitations of Study

7.1 Managerial Implications

This study is going to be very useful with the evolving market trends as the customer have vivid options to choose from. In a situation where the switching barrier is not high, a consumer can easily change the platform. In such conditions, the study brings out the fact what type of customer will be the most loyal segment, and based on the findings the company can plan accordingly to retain them. Not only this, but value also co-creation is a jargon that evolved during the time. Making the customer part of the product cycle and involving them through the journey is again a way to establish a loyal customer base and even the study suggests the same. The attributes that have come out to be significant will be the area of focus for the companies,

7.2 Limitations

Customer Loyalty depends on numerous other factors. We have limited our study to a few, that area can be explored more. In addition to this, this study can further be extended to other App-based platforms and other industries too. Not only this, but we have also focused our attention on the Indian context, this can be done across the globe and for other countries too.

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Appendix

R-Codes for Cronbach's Alpha Test

```
library(ltm)

library(readxl)

library(rmarkdown)

library(knitr)


setwd("D:/IIM Kashipur/Term-6/Dissertation-C/GDA Responses")


#enter survey responses as a data frame

data <- read_excel("GDA_Questionnaire.xlsx", sheet = "Questionnaires")


#attributes wise cron bach aplha

aesthetic <- data[,c(1:3)]

reward <- data[,c(4:6)]

focused_attention <- data[,c(7:9)]

perceived_usability <- data[,c(10:12)]

consumer_loyalty <- data[,c(13:18)]

value_cocreation <- data[,c(19:24)]

openness <- data[,c(25:28)]

concientiousness <- data[,c(29:32)]

extraversion <- data[,c(33:36)]

agreeableness <- data[,c(37:40)]

neuroticism <- data[,c(41:44)]
```

```
personality <- data[,c(25:44)]

user_enagagement <- data[,c(1:12)]


#For aesthetic

cronbach.alpha(aesthetic)


#For reward

cronbach.alpha(reward)


#For Focused_Attention

cronbach.alpha(focused_attention)


#For perceived_usability

cronbach.alpha(perceived_usability)


#For consumer_loyalty

cronbach.alpha(consumer_loyalty)


#For value_co-creation

cronbach.alpha(value_cocreation)


#For openness

cronbach.alpha(openness)
```

#For concientiousness

cronbach.alpha(concientiousness)

#For extraversion

cronbach.alpha(extraversion)

#For agreeableness

cronbach.alpha(agreeableness)

#For concientiousness

cronbach.alpha(neuroticism)

#For Consumer Personality

cronbach.alpha(personality)

#For user engagement

cronbach.alpha(user_enagagement)

Python Codes for CFA

import warnings

warnings.filterwarnings('ignore')

import pandas as pd

import numpy as np

from scipy.stats import zscore

```
import statsmodels.api as sm
from statsmodels.stats.outliers_influence import variance_inflation_factor
from sklearn.metrics import r2_score, mean_squared_error
from sklearn.model_selection import train_test_split
import matplotlib.pyplot as plt
import seaborn as sn
from sklearn.decomposition import PCA
from sklearn.preprocessing import StandardScaler
from factor_analyzer import FactorAnalyzer
import os
# Setting pandas print option to limit decimal places to 4
np.set_printoptions(precision=4, linewidth=100)
np.set_printoptions(formatter={'float': lambda x: "{0:0.3f}".format(x)})

#Setting working directory
os.chdir("D:/IIM Kashipur/Term-6/Dissertation-C/GDA Responses")
print("Current Working Directory " , os.getcwd())

# Loading Data
data = pd.read_excel('GDA_Questionnaire.xlsx', sheet_name = 'Questionnaires')
data.info()
data.head()

from factor_analyzer import (ConfirmatoryFactorAnalyzer, ModelSpecificationParser)
```

```
model_dict = {"Aesthetic": ["V1", "V2", "V3"], "Reward": ["V4", "V5", "V6"],
        "Focused_Attention": ["V7", "V8", "V9"],  "Perceived_Usability": ["V10", "V11", "V12"],
        "Con_Loyalty":  ["V13",  "V14",  "V15",  "V16",  "V17","V18"],  "Value_Cocreation":  ["V19",  "V20",
"V21", "V22", "V23", "V24"],
        "Openness": ["V25", "V26", "V27", "V28"],"Concientiousness": ["V29", "V30", "V31", "V32"],
        "Extraversion": ["V33", "V34", "V35", "V36"], "Agreeableness": ["V37", "V38", "V39", "V40"],
        "Neuroticism": ["V41", "V42", "V43", "V44"]}

model_spec = ModelSpecificationParser.parse_model_specification_from_dict(data, model_dict)

cfa = ConfirmatoryFactorAnalyzer(model_spec, disp=False)

cfa.fit(data.values)

cfa.loadings_
```

Python Codes for Correlation & Multiple Regression

```
import warnings
warnings.filterwarnings('ignore')
import pandas as pd
import numpy as np
from scipy.stats import zscore
import statsmodels.api as sm
from statsmodels.stats.outliers_influence import variance_inflation_factor
```

```
from sklearn.metrics import r2_score, mean_squared_error

from sklearn.model_selection import train_test_split

import matplotlib.pyplot as plt

import seaborn as sn

from sklearn.decomposition import PCA

from sklearn.preprocessing import StandardScaler


import os


# Setting pandas print option to limit decimal places to 4

np.set_printoptions(precision=4, linewidth=100)


np.set_printoptions(formatter={'float': lambda x: "{0:0.3f}".format(x)})


os.chdir("D:/IIM Kashipur/Term-6/Dissertation-C/GDA Responses")


print("Current Working Directory " , os.getcwd())


# Loading Data

data = pd.read_excel('GDA_Questionnaire.xlsx', sheet_name = 'Regression')

data.info()

categorical_features = ['Gender']

# Perform Dummy Coding

dummy_encoded_df = pd.get_dummies(data, columns = categorical_features)
```

```
dummy_encoded_df.head(10).T

X = dummy_encoded_df.drop(columns = 'consumer loyalty')

Y = data['consumer loyalty']

X.info()

#Correlation Heatmap

plt.figure( figsize = (12,10) )

sn.heatmap( data.corr(), annot = True );

plt.title( "Figure - Heatmap depicting correlation between features");


# Splitting Data into Train and Validation Sets

# Add constant - 1 to X, it will ensure that β0 is calculated

train_X, test_X, train_y, test_y = train_test_split( X , Y, train_size = 0.8, random_state = 38 )

print("Rows Train X:", len(train_X.index), "Columns Train X:", len(train_X.columns))

print("Rows Test X:", len(test_X.index), "Columns Test X:", len(test_X.columns))

print("Length Train y:", len(train_y))

print("Length Test y:", len(test_y))


# Building the model using training dataset

# Model Building process will take several iterations

model_1 = sm.OLS(train_y, train_X).fit()

model_1.summary2()

significant_vars = model_1.pvalues.where(model_1.pvalues < 0.05).dropna()

significant_vars = significant_vars.index.tolist()

significant_vars
```

```
significant_vars = ['reward',
 'perceived usability',
 'value co_creation',
 'neuroticism','Gender_Male']
train_X = train_X[significant_vars]
test_X  = test_X[significant_vars]

print("Rows Train X:", len(train_X.index), "Columns Train X:", len(train_X.columns))
print("Rows Test X:", len(test_X.index), "Columns Test X:", len(test_X.columns))
print("Length Train y:", len(train_y))
print("Length Test y:", len(test_y))

significant_vars
# Building the model using training dataset
# Model Building process will take several iterations
model_2 = sm.OLS(train_y, train_X).fit()
model_2.summary2()
significant_vars = model_2.pvalues.where(model_2.pvalues < 0.05).dropna()
significant_vars = significant_vars.index.tolist()
significant_vars
significant_vars = ['reward',
 'value co_creation',
 'neuroticism']
train_X = train_X[significant_vars]
```

```
test_X  = test_X[significant_vars]
print("Rows Train X:", len(train_X.index), "Columns Train X:", len(train_X.columns))
print("Rows Test X:", len(test_X.index), "Columns Test X:", len(test_X.columns))
print("Length Train y:", len(train_y))
print("Length Test y:", len(test_y))
significant_vars

# Building the model using training dataset
# Model Building process will take several iterations
model_3 = sm.OLS(train_y, train_X).fit()
model_3.summary2()
```