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Statistical Analysis of Spending on Food Delivery Apps

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ABSTRACT:

The high growth rate of food delivery apps related to smartphone usage has created a significant impact in terms of the level at which expenditure takes place related to food expenditure in urban areas. The current study will be focused primarily on the analysis in terms of importance, related to usage, based on the information derived, with respect to the essential elements which define the level of expenditure based on the usage of food delivery apps related to certain specified factors. Primarily, the information has been derived based on a sample of 101, taken in accordance with a survey conducted online. The bivariate model has been derived based primarily on descriptive statistics, in accordance with information derived from the analysis, in order to assess the level at which food expenditure takes place in accordance with a specified frequency related to usage levels of a specified implicational platform. Further, a Chi-square test has been conducted in order to assess the relationship related to expenditure levels, incorporating different factors such as frequency, expenditure, etc.

These results show that the behavioural intensity variables, namely frequency of use of the app and spending per order, are highly significantly and positively related to average monthly spending, with $p < 0.001$. This gives an indication that repeated usage and increased order-level spending have strong impacts on higher cumulative monthly spending. However, delivery fee range and perceived influencing factors were not significantly related to monthly spending. In addition, the demographic variables had a limited effect on expenditure behaviour. The findings indicate that the factors pertaining to behavioural engagement result in more decisive judgements with regard to spending patterns compared to cost-related or demographic characteristics. The research offers empirical perceptions into spending behaviour of consumers within digital food-delivery ecosystems and develops an understanding of expenditure dynamics in app-based consumption environments

Keywords: *Food Delivery Apps, Spending Behaviour, Monthly Expenditure, Usage Patterns,*

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Chi- square Analysis

INTRODUCTION:

The consumption pattern of food has completely changed for the younger generation of adults and college-going students by the adoption of digital technology and smartphones. In this context, OFDAs have played a very significant role as a time-saving manner for busy lifestyle people to access different types of food. Several researchers have identified that the usage of food delivery applications is frequent among students, based on various factors such as accommodation type, time management, and convenience, among others [1]. This high usage is also associated with specific patterns of ordering food on the timing of consumption, nature of food ordered, and average spend on ordering.

The increasing adoption of e-businesses and online portals has also facilitated the use of online food ordering services in India. Consumers have been increasingly drawn to the online food ordering services since it saves them from having to physically go to the restaurants. This trend has come about as a result of changes in consumer perceptions and attitudes in their increasing dependency on the online food delivery services for their daily food needs [2]. Food delivery apps are now part of the urban lifestyle.

It was concluded from existing literature that, even though it is quite common for people to be aware of the existence of food delivery services on the internet, usage, and expenditure on those services depend on a number of factors, including pricing, delivery, discount, and health considerations. Literature concerning undergraduates indicated that, even though food delivery services are quite popular, factors such as pricing, serving capacity, health considerations, and environmental factors could restrict their usage. However, regular discount offers, enhanced interfaces, and faster delivery times have been effective in increasing their usage and expenditure [3].

Youth studies also focus on demographic variables, as well as socioeconomic factors, which are associated with food delivery app use. It has been noted that demographic variables such as residing condition, management of finances, food insecurity, and status influence food delivery app use. Students living alone or managing their finances themselves are likely to use food delivery apps, resulting in increased total costs incurred [4].

Large-scale research has recently confirmed that food delivery apps have caused a shift in eating habits in urban areas by allowing convenience-driven ordering and reducing the number

of meals that are home-cooked. The outcome of this has been changes in mealtimes, increased calories, and changes in food diversity. Food delivery apps play both positive and negative roles regarding health and financial habits in relation to their effect on food delivery [5]. The food ordering application quality also impacts the behaviour of users. Several studies have shown that content quality, information accuracy, transparency of pricing structures, and satisfaction levels greatly emphasize the issue of repeated usage behaviour. The factor of "Monthly Expenditure" was noticed to be linked to the continued usage pattern of the application; this confirms the direct relationship between application usage experience and the amount spent on services provided through the application to some extent [6]. A number of studies conducted on consumer attitudes on online food ordering sites in the Indian context highlight the importance of convenience, control, ease of information, and technology comfort in shaping consumer satisfaction and intentions. These are indirectly related to spending as they create more dependence on online food ordering sites [7].

Food delivery app-driven expenditure behaviour became an object of research in the context of the COVID-19 pandemic. The research conducted among Gen Z consumers reveals that during the pandemic, the forces of necessity and value had a more prominent impact on expenditure behaviour, rather than the forces of impulse and luxuriousness. The experience of service, savings of time, and savings of cost impacted expenditure behaviour, while savings orientation did not have moderating effects on it [8].

The food delivery apps have had a multifaceted impact on the way money is spent by college students in the Indian urban context. On one hand, the food delivery apps have ensured convenience, flexibility, and diversity in food, while, on the other hand, the apps are accountable for the immense impulsiveness, overspending, and the lack of spending discipline because of the facility of online payments and discounts [9]. Additionally, it has been related to shifts in food and socialization behaviours.

At last, researches involving consumer buying behaviour in the online food delivery market show that promotional offerings, value, social influences, perceived usefulness, and experience matter to consumer buying decisions and intentions to continue using services in the food delivery market [11]. Although a significant amount of research has been conducted on adoption, satisfaction, and behavioural intentions, very few studies have been carried out with regard to the determining factors for average spending each month through inferential

statistical methods. This research aims to fill this gap by examining what factors affect the spending incurred by food delivery apps each month.

DATA AND METHODS:

The proposed study uses primary information collected through an online structured questionnaire. The intention was to investigate the money spent through the usage of food delivery application services. The survey was conducted among a wider population who were using the services. The responses with errors were deleted, and 101 were left to be analyzed. Those that were incomplete were discarded.

Data collection was conducted using a questionnaire, which was designed to provide information relating to demographic statistics, usage statistics, the use of the most preferred food delivery apps, the amount spent each time, and the amount spent per month. Descriptive statistics, such as frequencies and percentages, were used to analyze the data. Bivariate analysis was conducted by employing cross-tabulation tables to examine the association between key variables. Chi-square test statistics were used to uncover whether a link existed between a groups of categorical variables. Data was further analyzed by employing graphical aids, such as bar charts and pie charts.

OBJECTIVES:

- Analyze usage patterns for food delivery apps, such as usage among people and nature of the platforms.
- To conduct analysis on users' expenditure behaviour through average spend per order and average expenditure on food order apps every month.
- For the determination of the factors that influence the spending behaviour of individuals using food delivery mobile applications, this research applies the statistical analysis techniques of bivariate statistical analysis and inferential statistical analysis.
- This is aimed at determining the demographic factors that may be connected to the spending habits in the food delivery application case.

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ANALYSIS AND RESULTS:

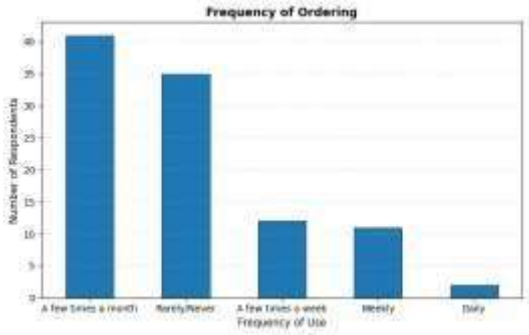

Figure 1.

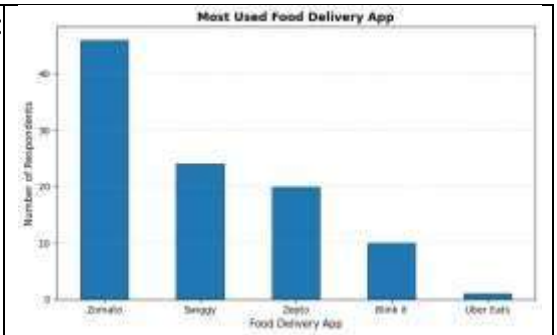

Figure 2

Figure 3

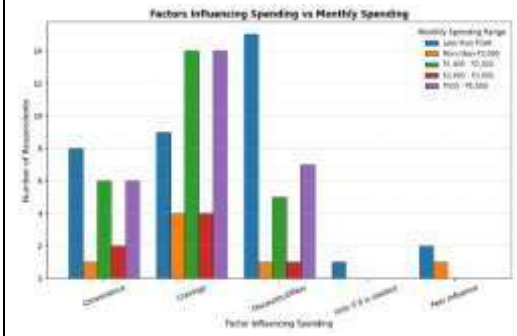

Figure 4

Figure 1 displays the ordering frequency through food delivery applications. It is observed that the majority of the users in the data set ordered food a few times a month. Then come the groups that seldom or never ordered food through these applications. This is then followed by the people who ordered food a few times per week and fewer people who ordered food every day. This data predicts that the usage of food delivery applications is moderate, not high. This is very likely to be the factor that influences the spending behaviour of the people in the data set. Even moderate usage of the applications will result in more monthly expenditure.

Figure 2 Most frequently used food delivery application. Zomato was found to be the most frequently used, followed by Swiggy. Zepto and Blinkit were moderately used, while Uber Eats were merely preferred. This indicates the presence of a specific group in the market using the application. Spending behaviour thus identified in this study was found to be largely influenced by major players in the market, which may have a significant impact on expenditures.

Figure 3 explores the correlation between the spending done in every order and the monthly expenditure. A growing trend can be identified in the spending pattern, wherein individuals

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engaged in spending between ₹200 and ₹500 every order are distributed across different levels of monthly expenditure, while a majority of the respondents engaged in spending below ₹200 spend the minimum in the lower category of the monthly expenditure. Figure 4 is a study of the factors affecting expenditure for various monthly expenditure groups. Discounts seem to dominate the remaining categories for lower levels of spend. However, in higher levels of monthly expenditure, other factors like craving and convenience become relatively more important. Peer effects, as well as necessity, show limited variability for expenditure groups. Despite this, there is limited structural differentiation in levels of expenditure.

On the whole, the graphical analysis indicates that behavioural intensity variables, namely the usage frequency and the spending per order, have the strongest impact in shaping monthly expenditure patterns, with the external influencing factors and the platform usage having the lowest levels of differentiation.

Frequency of App Usage × Monthly Spending	Less than ₹500	More than ₹ 3,000	₹1,000 - ₹2,000	₹2,000 - ₹3,000	₹500 - ₹1,000
A few times a month	8 (19.5%)	2 (4.9%)	15 (36.6%)	3 (7.3%)	13 (31.7%)
A few times a week	0 (0.0%)	2 (16.7%)	4 (33.3%)	3 (25.0%)	3 (25.0%)
Daily	0 (0.0%)	2 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Rarely/Never	25 (71.4%)	1 (2.9%)	1 (2.9%)	1 (2.9%)	7 (20.0%)
Weekly	2 (18.2%)	0 (0.0%)	5 (45.5%)	0 (0.0%)	4 (36.4%)

The bivariate table reveals the distribution of average monthly expenditures according to the frequency of using food delivery applications. From the row percentages, it can be observed that more frequent users fall into the highest categories regarding their average monthly expenditures, and less frequent users fall into lower categories.

Spending per Order × Monthly Spending	Less than ₹500	More than ₹3,000	₹1,000 - ₹2,000	₹2,000 - ₹3,000	₹500 - ₹1,000
Less than ₹200	18 (85.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (14.3%)
More than ₹1,000	1 (14.3%)	3 (42.9%)	1 (14.3%)	2 (28.6%)	0 (0.0%)

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₹200 - ₹500	14 (24.6%)	1 (1.8%)	20 (35.1%)	3 (5.3%)	19 (33.3%)
₹500 - ₹1,000	2 (12.5%)	3 (18.8%)	4 (25.0%)	2 (12.5%)	5 (31.2%)

From the above table, it can be inferred that the more the amount spent per order, the more the average monthly expenditure. This is clearly reflected in the row percentage, which shows a steady rise in the average monthly expenditure with the rise in the amount of per order expenditure.

Factors Influencing Spending × Monthly Spending	**Less than ₹500**	**More than ₹3,000**	**₹1,000 - ₹2,000**	**₹2,000 - ₹3,000**	**₹500 - ₹1,000**
Convenience	8 (34.8%)	1 (4.3%)	6 (26.1%)	2 (8.7%)	6 (26.1%)
Cravings	9 (20.0%)	4 (8.9%)	14 (31.1%)	4 (8.9%)	14 (31.1%)
Discounts/Offers	15 (51.7%)	1 (3.4%)	5 (17.2%)	1 (3.4%)	7 (24.1%)
Only if it is needed	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Peer Influence	2 (66.7%)	1 (33.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

The bivariate table gives the data about the monthly expenditure based on various factors that govern the expenditure patterns. The row percentage analysis indicates that monthly expenditure is equally distributed across various expenditure categories based on all influencing factors, and there is no variation in expenditure based on influencing factors.

Spending per order x Delivery Fee Range	**Less than ₹200**	**More than ₹1,000**	**₹200 - ₹500**	**₹500 - ₹1,000**
I only order with free delivery	8 (42.1%)	1 (5.3%)	6 (31.6%)	4 (21.1%)
Less than ₹20	3 (25.0%)	0 (0.0%)	7 (58.3%)	2 (16.7%)
More than ₹100	4 (18.2%)	1 (4.5%)	14 (63.6%)	3 (13.6%)
₹20 - ₹50	3 (10.7%)	1 (3.6%)	20 (71.4%)	4 (14.3%)
₹50 - ₹100	3 (15.0%)	4 (20.0%)	10 (50.0%)	3 (15.0%)

In reference to the above table, it can be assumed that changes in the fee ranges of the delivery charges do not affect the expenses incurred on a larger scale. This can be visually identified as all the values correspond to a particular figure of ₹200 to ₹500 spent by the customers, as presented by the percentage column. The lack of a trend line, either increasing or diminishing,

further confirms that delivery charges have no effect on expenses spent on individual orders.

Hypothesis	Variable Tested	χ^2 Value	p-value	Decision (α =0.05)	Result
H1	Frequency of App Usage × Monthly Spending	71.73	< 0.001	We reject null hypothesis	Significant
H2	Spending per Order × Monthly Spending	59.74	< 0.001	We reject null hypothesis	Significant
H3	Factors Influencing Spending × Monthly Spending	16.42	0.42	We do not reject null hypothesis	Not Significant
H4	Delivery Fee Range × Monthly Spending	13.04	0.67	We do not reject null hypothesis	Not Significant

The Chi-square tests were employed to test for the relationship between certain behavioural factors and average spending done on food delivery applications every month. The findings show a significant relationship between app usage and spending (χ^2= 71.73, p-value <0.001). It was observed that as people use food delivery applications more frequently, they tend to spend a higher amount of money every month. Also, a significant relationship has been established between spending per order and spending (χ^2= 59.74, p-value <0.001). The result shows that as spending per order increases, overall spending also increases.

However, the Chi-square test for the factors that influence spending and the levels of spending (χ^2 = 16.42, p-value = 0.42) was determined to be non-significant, indicating that the cited influencing factors, such as discounts or convenience, do not independently affect the levels of user spending. Equally, the relationship between the range of the delivery charge and the levels of spending (χ^2 = 13.04, p-value = 0.67) was also determined to be non-significant, indicating that the influence of the cost of delivery does not significantly affect user levels of spending.

In general, the evidence reveals that behavioural factors of intensity, such as order frequency and spending per order, are more important than cost and perception factors in influencing spending patterns on the platform.

CONCLUSION:

The current research focuses on the usage pattern and spending habits of users of food delivery application services, particularly concentrating on the factors determining average monthly expenditure. The result shows that food delivery applications are being used extensively on a recurring basis, thereby depicting increasing adoption of these services in daily life. The

outcome of data analysis clearly reveals that behavioural factors like application usage frequency and average spending in each order significantly affect monthly spending. The more frequent the order placement, the more cumulative expenditure is incurred. Conversely, demographic parameters and food delivery charges do not establish much of a relationship between them and monthly expenditure. This implies that application usage intensity is more decisive than user parameters. The significance of financial awareness among application users about cumulative spending on food delivery services is concluded from the current research findings. The result also helps in arriving at meaningful conclusions for food delivery organizations about prudent promotion and pricing policies.

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