

# Factor Analysis of Students' Exposure to Social Media for Food and Beverage

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## ABSTRACT

Food and beverage marketing on social media is a powerful factor to influence students' exposure to social media and application for food and beverage. It is a well-known fact that most of the food and beverage business target young people on the social media. The objective of the study is to identify the factors associated to the students' exposure in the social media platforms for food and beverage. The young students between the ages 20 to 26 years completed a self-administered questionnaire survey on their media use for food and beverages. The questionnaire was prepared using Likert scale with five options from strongly agree to strongly disagree. The data set was described with descriptive statistics such as mean and standard deviation. The exploratory factor analysis with varimax rotation method was used to extract the factors. The most popular social media among the respondents were Facebook, Instagram, and You Tube. 73.3% of the students were exposed to food and beverage application in their mobile device and 76% of them followed the popular food and beverage pages in social media. The result revealed that social media posts, promotional offer, and hygienic concept have positively influenced majority of the students' exposure to social media for food and beverage.

**Keywords:** Factor analysis, Social Media, Food and Beverage, Student, Promotional Offer

## INTRODUCTION

The invention of a mobile, powered by the internet, and the availability of various applications is a major advantage for different food and beverage business to offer consumer support and care. Easy access to mobile phones has drastically

transformed the way of young people, socialize, entertain, communicate, and engage them. The young generation has the world's biggest reference library on their hand in the form of a smart phone. The young students can search for just about anything in any situation as long as they have an internet connection. According to Hilde et al. (2018) the consumers of age 13 and older are highly engaged with social media platforms. This survey maps social media users' engagement experiences with Facebook, You Tube, Instagram, and evaluations of advertising on these platforms.

Social media plays a leading role in the daily life of students. It creates a wide range of impact on students when information about food and beverage is shared on social media. If they need to find a cuisine recipe, cooking technique and availability of food in a market, the mobile application and the social media networking definitely help them. The olden time of paper menus in a restaurant, waiting in a dining area, and standing in the long queue in the shop to get the food are gone with the increasing popularity of social media. The food and beverage delivery innovation have triumphed the consumer market. The wide range of mobile application and social media platforms has helped the young students to enjoy their most favorite food and beverage, and restaurant meal with the delivery at home. Prompt messaging about a preparing food and beverage, image sharing, status update, video sharing are limited by the major elements that play a role in the increasing trend of students' exposure to

social media for food (Lievrouw and Sonia, 2006).

The study conducted with the young adults of age 17 to 27 years found that the variables product price, attractiveness perceived quality, and brand experiences are the sensible causes for the satisfaction of smartphone users (Shrestha, 2020). The study on interactive food and beverage marketing discussed on the passionate use of social media by young people and how adolescents have become primary targets of a new media and marketing. The six key features: ubiquitous connectivity, personalization, peer-to-peer networking, engagement, immersion, and content creation are the representation of the ways in which young people are shaped by the digital culture (Montgomery and Chester, 2009).

The adolescents aged 7 to 16 years were surveyed on their media use and it was found that overall, 72% of participants were exposed to food marketing. The study estimated that children and adolescents see food marketing 30 and 189 times on average per week on social media apps, respectively (Kent et al., 2019).

Social media empowers communication for not only the students but also for business of food and beverage. E-commerce has developed the largest platform for ordering and shopping online, which not only helps consumers to purchase but also merchants to brand business. This business has developed due to online advertisements, promotional offers, celebrity generated content, and other media webpages because of prompt information sharing.

Celebrities from sports and entertainment business mostly influence the young students. Food and beverage business also use celebrities as a brand ambassador to help promote a brand by influencing others to buy a food and beverage products. But this traditional concept is overlooked by some of the food and beverage business houses. There is no longer need to be a famous celebrity to have inspiration over

others. The students can simply be influenced by a well-liked blog, a widely viewed You Tube channel, cooking show, or even just a good following Facebook or Instagram. The young students can be influenced by the content posted by their own friend circle as well. For this reason, the present study was conducted to identify the factors associated to the students' exposure in the social media platforms for food and beverage. It was assumed that the young students would be highly exposed to social media platform.

## METHOD

This cross-sectional study was conducted in three private colleges of Kathmandu district of Nepal. The self-administered questionnaire survey was conducted in the month of September 2019. The minimum sample size was determined under certain assumptions. The minimum sample size was calculated as

$$\begin{aligned} n &= \frac{z^2 p(1-p)}{e^2} \\ &= \frac{(1.645)^2 (0.5 \times 0.5)}{(0.1)^2} \\ &= 68 \end{aligned}$$

Where,  $n$  = sample size,  $z$  = confidence level at 10% (standard value of  $z = 1.645$ ),  $p$  = sample proportion (50%), and  $e$  = margin of error, 10%.

This study was conducted among 75 students of three private colleges of Kathmandu. The inclusion criteria of a sample were i) studying bachelor's degree program ii) age more than 20 years, and iii) active in social media. The sampling frame has been prepared to obtain a greater degree of representativeness and the students were selected randomly. The required number of samples was selected as 25 students from each college. The questionnaires were distributed with the written consent of respondents and collected with the help of administrative staff of the college. The questionnaire comprises two parts; first, demographic information of the respondents

and second, the information of the respondents related to food and beverages posts, social media, price and discount offers. The questionnaire consists of few dichotomous question answers. The statements related to the exposure to social media for food and beverage were rated on a five-point Likert scale, where '1' represents strongly agree and '5' represents strongly disagree with the statement (Likert, 1932).

The questionnaire consisted of close ended and open-ended questions were pre-tested for reliability among 15 students who were not included in the study sample. The data were analyzed using IBM SPSS version 23.

The data analysis was done using exploratory factor analysis. The study has used the extraction method based on principal component analysis and the rotation method based on varimax with Kaiser normalization (Shrestha, 2021). The factor analysis model assumes that there are 'm' underlying factors whereby each observed variables is a linear function of these factors together with a residual variance (Cattell, 1973).

$$X_j = \lambda_{j1}F_1 + \lambda_{j2}F_2 + \dots + \lambda_{j3}F_3 + \lambda_{jm}F_m + \varepsilon_j$$

where,  $j = 1, 2, \dots, p$ ,  $\lambda_{jm}$  = the factor loading of the  $j^{\text{th}}$  variable on the  $m^{\text{th}}$  common factor,  $F$  = score on the  $m^{\text{th}}$  common factor,  $\varepsilon_j$  = measurement error for  $X_j$ .

Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy has been premediated to check the suitability of data set for factor analysis. KMO value ranges from 0 to 1; the values between 0.50 to 0.59 are miserable, 0.6 to 0.69 are mediocre, 0.7 to 0.79 are middling, 0.8 to 0.89 are meritorious, and 0.9 to 1.0 are marvellous (Yong, 2013). The Bartlett's test of Sphericity has been expended for testing the null hypothesis that the original correlation matrix is an identity matrix (Stevens, 1996). Several studies examined and discussed the problems of multicollinearity in the data set (Shrestha, 2020). In this study, the

multicollinearity among the variables can be noticed by calculating the determinant score of correlation matrix.

The Cronbach's alpha or coefficient of reliability has been calculated to test for the internal consistency. In other words, it is used to compare the answers of the respondents to see if they all agree with each other (Cronbach, 1951).

## RESULTS & DISCUSSION

The study reports that  $n = 33$ , 44% of the students were male and  $n = 42$ , 56% of them were female. The minimum age was 20 years and maximum age was 26 years. The average age of students was 21.43 with standard deviation 1.367 years. Majority (82.7%) of them were between the age group 20-22 years. The students of the study were not working anywhere and hence, depend on their parents or guardians for the pocket money. The pocket money is money which students are given by their parents or guardians per day. The pocket money of 24% students was less than NPR (Rs.) 100, 56% of students had Rs 100 to Rs. 300, 10.7% of students had Rs 300 to Rs. 500, and 9.3% students got pocket money more than Rs. 500 per day.

The respondents were the students who can be influenced by different information in the social media platforms associated with the food and beverages. The most popular social media websites that the respondents get influenced to consume fast food and beverages were Facebook ( $n = 18$ , 24%), Instagram ( $n = 39$ , 52%), YouTube ( $n = 13$ , 17.3%), and other medias ( $n = 5$ , 6.7%).

With the growth of smartphones, mobile application development organizations have designed different user-friendly apps. These easy to use applications have helped several food and beverage production house in attracting inestimable consumers in a recent couple of years. The respondents were also believed that the mobile apps of food and beverage business are useful and they have installed in their smart phones. Out of the total,  $n = 55$ ,

73.3% of the respondents had installed food and beverage apps in their mobile devices whereas n = 20, 26.7% respondents did not install.

Today social media has contributed to the lives of million people; it's the ability to find recipes, cooking techniques, and culinary arts. Being able to log into social media pages, and find new information from food and beverage related pages make students' life more interesting. The respondents, n = 57, 76%, followed the popular food and beverage pages while n = 18, 24% respondents did not follow food pages in social media.

Many respondents use food and beverages apps and pages as a coping mechanism to deal with such feelings as stress, boredom, or anxiety, or even to prolong feelings of joy. The impact of increasing exposure to images and videos of food and beverages in social media platform will influence the respondent's desire for food or visual hunger.

The majority of respondents, n = 66, 88%, agreed that they were influenced and n = 9, 12% of respondents did not agree to the statement that the exposure to images or videos of food and beverage had influenced desire for food.

The majority (n = 48, 64%) of the respondents believed that name and image of food seized their attention primarily when they uncovered food and beverage posts in social media. The twelve percent (n = 9) of the respondent observed that the price also

influenced their choice of food. 9.3% (n=7) of respondents stated that the ambience also could inspire their choices. 12% (n = 9) of students believed location was one of the influencing factors. Only n = 2, 2.7% of respondents considered that offers associated with the food and beverages could change their choice of food.

### Factor Analysis

To analyze the students' exposure to social media for food and beverage, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, Bartlett's test of Sphericity, and the determinant score have been calculated to identify the suitability of the data set to apply factor analysis (Pallant, 2010).

Table 1: KMO, Bartlett's Test, and Determinant Score

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.70	
Bartlett's Test of Sphericity	Approx. Chi-Square	210.31
	df	28
	Sig.	0.00
Determinant Score	0.051	

Table 1 display that the value of Kaiser-Meyer- Olkin statistics is equal to 0.70, which specifies that the sampling is adequate, and factor analysis is appropriate for the data. The Bartlett's test of Sphericity is highly significant with  $p < 0.001$ , indicating that there are some relationships between the variables. The determinant score is  $0.051 > 0.00001$ , which displays that there is absence of multicollinearity.

Table 2: Eigenvalues and Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.26	40.73	40.73	3.26	40.73	40.73	2.19	27.38	27.38
2	1.63	20.42	61.14	1.63	20.42	61.14	2.18	27.27	54.65
3	1.04	13.06	74.20	1.04	13.06	74.20	1.56	19.55	74.20
4	0.61	7.66	81.86						
5	0.48	6.01	87.87						
6	0.43	5.33	93.20						
7	0.31	3.89	97.08						
8	0.23	2.92	100.00						

Extraction Method: Principal Component Analysis.

Table 2 shows that there are eight linear components within the data set before

extraction process. After extraction and varimax rotation method, there are three

linear components within the data set for the eigenvalue greater than one. The result shows that 74.2% common variance shared by 8 variables can be accounted by three factors. This initial outcome suggests that the final solution will extract not more than 3 components.

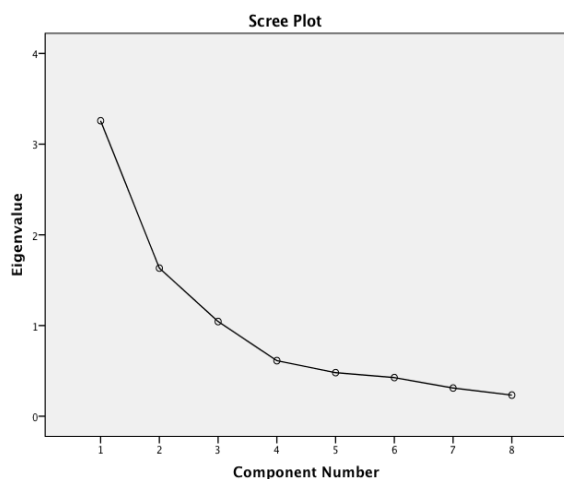


Figure 1: Scree Plot

Figure 1 displays the scree plot, which is used to determine the number of

factors to be retained. The graph shows eigenvalue along the y-axis and the component number along the x-axis. The figure shows that there are three components for which the eigenvalue is greater than one.

Table 3 demonstrates the factor loadings, mean, standard deviation, and Cronbach's alpha values. The factor loading expressed the relationship of each variable to the underlying factor of students' exposure to social media. The first component is labeled as 'Social media posts' explained 27.38% of total variance with eigenvalue 3.26. This component contained three items such as user and celebrity generated content, advertisements, and group member's shared posts on social media. All three items are tending to strongly agree according to their mean score of the scale. Factor loading <0.4 are suppressed.

Table 3: Factor Loadings, Mean, Standard Deviation, and Cronbach's Alpha

Variables	Component			Mean	SD	Cronbach's Alpha
	1	2	3			
User generated and celebrity generated content	0.801			2.28	1.06	0.787
Advertisements	0.869			1.88	0.87	
Group member's shared posts on social media	0.815			1.88	0.77	
Price of a product in bulk purchasing		0.733		2.49	0.99	0.803
Coupon and discount offers for online ordering		0.877		2.52	1.01	
Convenience and delivery		0.839		2.67	0.92	
Consider health factor			0.89	2.03	0.90	0.708
Condition of food delivered			0.82	1.95	0.99	
Extraction Method: Principal Component Analysis.						
Rotation Method: Varimax with Kaiser Normalization.						

Note: 1= strongly agree, 2 = agree, 3 = neutral, 4= disagree, 5= strongly disagree

In table 3, the second component entitled 'Promotional offer' explained 27.27% of total variance with eigenvalue 1.63. This component included three items such as price of a product in bulk purchasing, coupon and discount offers for ordering, and convenience and delivery at home. These three items have a tendency towards agree according to their mean score of the scale.

The third component named 'Hygienic' explained 19.55% of the total variance with eigenvalue 1.04. This component encompassed two items such as

considering health factor and condition of food delivered. These two items have a tendency towards agree according to their mean score of the scale.

The Cronbach's alpha or coefficients of reliability for the three components are 0.787, 0.803, and 0.708 respectively. The Cronbach's alpha is greater than 0.7, which indicates that the variables exhibit a correlation with their components grouping and thus they are internally consistent. The overall coefficient of reliability is 0.783 for 8 variables reflecting the association with

the students' exposure to social media for food and beverages.

The current study has limitations. For instance, students' media exposure information was self-reported and is therefore subject to measurement error. This study was also carried out among the small sample of students living in a capital city as a result; findings may not be generalizable to the larger population of students.

## CONCLUSION

Students are exposed to various forms of food and beverages promotional materials while using social media application, and websites such as Facebook, Instagram, and You Tube. Most of the food and beverage business promotes their food products in a better way, but some of them don't. The social media posts of food and beverage by the user, celebrity and their friend circle, advertisements, price offer, discounts, convenience, health concerned factors, and condition of the food on delivery were the positively influencing variables identified by the factor analysis method. The statistical analysis of this study revealed that these key factors mostly influenced the students' exposure to social media for food and beverage in a positive way.

The study adds to the existing knowledge by providing some information related to the exposure of the students to the social media. This study also helps researchers to replicate the study in other business sectors and carry out detail analysis. Further research can be carrying out by expanding the scope of the study with additional explanatory variables, probability sampling method, and more sample size.

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