

CONSUMERS' COMMITMENT FOR DIGITAL PAYMENTS: QUALITATIVE ANALYSIS USING WORD CLOUD WITH R SOFTWARE

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Abstract

An initiative had been taken place to use data analytics for marketing research. Many research works have been using empirical tools for analyzing consumer behavior. In this study qualitative data collected through semi-structured interviews had been analyzed by using R software. Syuzhet and sentimentr packages have been used to analyze the qualitative data in this work. The results of the study show that consumers are having continuance intention towards digital payments but they are concerned about security of those transactions.

Keywords: Data analytics, consumer behavior, digital payments, marketing analytics, qualitative data.

Introduction

Many studies have taken place on consumer behavior towards use of digital banking mobile apps. Due to sudden changes in global business environment with influence of pandemic, importance of conducting research towards digital solutions had increased. Pandemic has made the world to learn many things from experiences. Business processes like work-from-home, online retailing and online education have been confined to some regions with technological infrastructure. But pandemic had made mandatory for variety of organizations to adopt technology. In this regard the banking transactions are more crucial for consumers in the advent of Covid-19 pandemic. Social distancing, face masks and online mode are common words from the past two years. A specific study to deeply observe the thinking of consumers with regard to mobile banking apps is required to fulfill the research gap. Earlier studies have been conducted through empirical investigations also referred as quantitative research works. In this study qualitative approach is implemented to keenly understand the consumers' perception and attitude towards digital payments. In this paper digital payment means using mobile banking apps such as PhonePe and Google Pay for purchase of products in both offline and online mode. Data analytics, machine learning, marketing analytics and artificial intelligence have gained popularity and widely applied in present era.

Research Objectives

1. To adopt qualitative method for analyzing the perception of consumers towards digital payments.
2. To know the emotion of consumers with regard to satisfaction of digital payments.
3. To know the perception towards security with regard to digital payments.
4. To deeply understand the sentiment of users towards digital payments.

Literature Review

Organizations irrespective of their size are adopting technology to communicate with stakeholders of business. Pandemic had forced organizations to use technology for completing business processes (Priyono et al., 2020). Private universities have used digital marketing techniques for promotion of products to target students (Prihadini et al., 2020). Covid-19 had created challenges to make services to consumers with informal settlement in urban areas (Wilkinson, 2020). Optimists have viewed pandemic to provide innovative solutions for providing services to mankind (Kuckertz et al., 2020). Perwej (2020) had explained about the challenges faced by Indian banking sector with sudden announcement of lockdown. The collection of loan repayments would be tough if borrowers don't have internet or mobile banking facility. Evans et al., (2020) had given insights about the existing knowledge and future agenda for research from the dimension of Covid-19 impact. Unplanned implementation of technology for delivery of products and services had taken place due to Covid-19 (Dannenberg et al., 2020). Employees in healthcare also felt unsupportive and invisible to others during pandemic Covid-19 (Sterling et al., 2020). Since the outbreak of the COVID-19 pandemic, customers fear for their health when interacting with service providers (Bove & Benoit, 2020). Organizations in education sector have developed innovative products like digital libraries and webinars to engage students without losing their precious time to access knowledge and technology (Temiz & Salelkar, 2020). "COVID19 pandemic managed to change customer behavior towards depending more on online shopping and e-payment methods during COVID19 pandemic and the circumstances of lockdown and quarantine, in addition to that, results of pre and post behavior indicated that the influence appeared to be more influenced by gender and academic qualification as females' behavior appeared to be more influential and those who held a diploma" (Hashem et al., 2020). Mindfulness had been considered as an important variable for analyzing mobile payment adoption by Flavian et al (2020). All businesses including retailing sector is going to experience changes in business process due to pandemic Covid-19 (Roggeveen & Sethuraman, 2020).




Methodology

Qualitative research approach had been implemented in this study. There demographic details included are age, gender and occupation. There are five questions in the semi-structured questionnaire from 20 respondents. The sample size is small but it is enough to conduct qualitative research studies. All the answers were noted for each question. Initially demographic details are collected from the respondent. Later they will be explained about the purpose and expected outcomes from the research work. It is essential for respondents to have at least one year experience with mobile apps to get qualified for the survey. The privacy details such as name, identity data and contact details are not collected. Snowball sampling had been used for selecting the respondents. All the interviews have been taken place with prior consent and in virtual mode.

R software had been used for data analysis. The packages from R software such as 'tm', 'wordcloud', 'sentimentr' and 'syuzhet' have been used for data analysis. These packages are more suitable for conducting qualitative data analysis. These packages have unique features to

analyze qualitative data. MS-Excel had been used to develop line charts for the output obtained from R software with regard to sentiment analysis. These packages are widely used in data analytics for deeply understanding the meaning of complex data.

Table 1 -Data analysis with word cloud

Code	Question/ Statement	Word Cloud Output
Satisfaction	C1. What is your satisfaction level towards digital payment apps?	
Frequency	C2. For which products digital payments is frequently sued?	
Security	C3. Do you feel secured with digital payments?	

(Source: Output from R)



Data Analysis & Interpretation

The sample (N = 20) consists of respondents with gender (male = 70% and female = 30%) with age in years (Mean = 27.5 years, SD = 2.50 years). Respondents from different occupations (employees = 60%, students = 20%, business = 10% and others = 10%) have participated in the survey). Five statements have been used in the semi-structured questionnaire. For each of the question (statement) word cloud technique had been used to assess the opinion of

the respondents. The terms payment had been used many times by the respondents. It is found that consumers (users) are satisfied with digital payments. For the statement related to frequency, the terms appeared in the word cloud are tickets, groceries and shopping. For the statement related to security the term password had been with high frequency in the responses. The world clouds (plots) are presented in Table 1 and Table 2. It is clear from the statement (code = continuance), the respondents have opined to continue with digital payments in future. For the statement (code = suggestions), the term OTP and security have been with high frequency from responses.

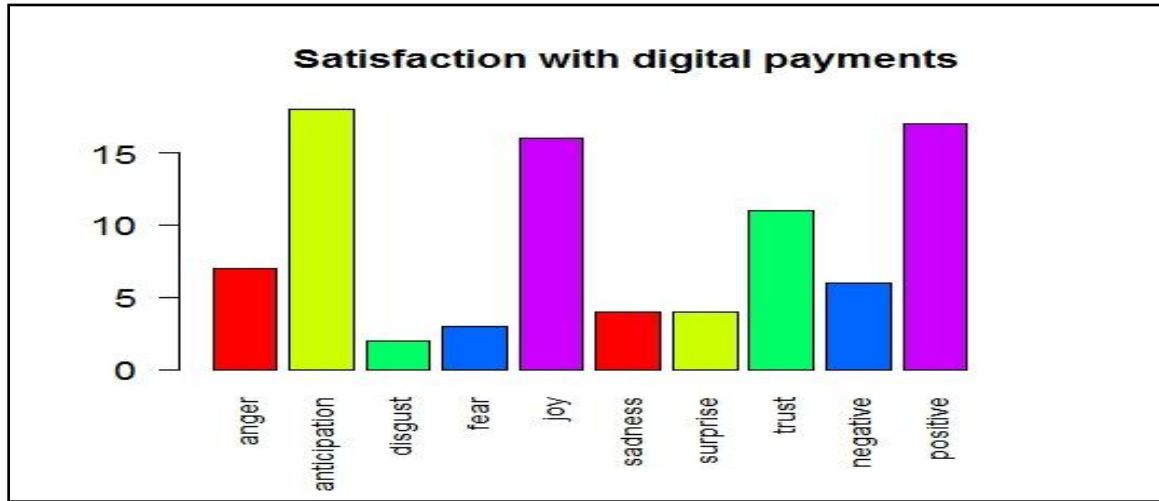
‘Sentimentr’ package had been used to test the score for each statement. The mean of the sentiment score is 0.115. The sentiment score has interval from -1 to +1, the results that there is positive sentiment with regard to satisfaction of digital payments. For continuance responses, the sentiment score (Mean = 0.106) shows that there is positive polarity towards continuance of digital payments by the users.

Table 2-Data analysis using word cloud

Code	Statement	Word Cloud Output
Continuance	C4. Would you continue digital payments in future also?	
Suggestions	C4. Would you continue digital payments in future also?	

(Source: Output from R)

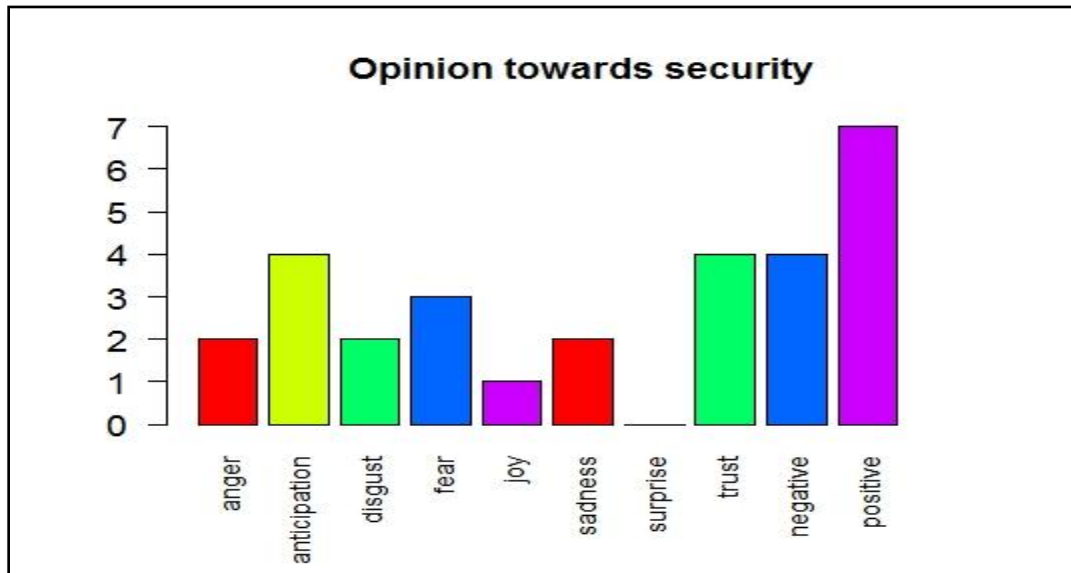
Figure 1-*Satisfaction with digital payments using syuzhet*



(Source: Output from R with syuzhet package)

Syuzhet uses eight kinds of emotions for each of the statement. From Figure 1 it is evident that consumers are more positive and least with disgust towards satisfaction variable. The anticipation and joy are observed to be high among the respondents for the variable. For the statement related to security the Figure 2 is presented. The emotions from the analysis shows that consumer are positive and least surprise with the security of the digital payments.

Figure 2-*Opinion towards security using syuzhet*



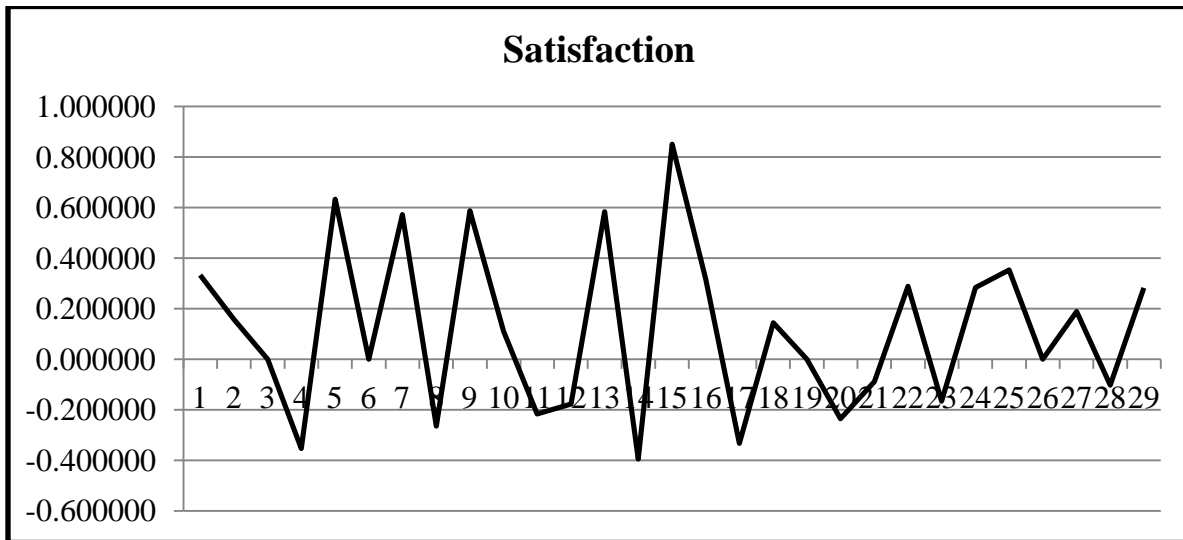
(Source: Output from R with syuzhet package)

In syuzhet package the following procedure is used to evaluate the sentiment or emotion for opinion of qualitative data. “The get_nrc_sentiment implements Saif Mohammad’s NRC Emotion lexicon. According to Mohammad, “the NRC emotion lexicon is a list of words and

their associations with eight emotions (anger, fear, anticipation, trust, surprise, sadness, joy, and disgust) and two sentiments (negative and positive)”. The get_nrc_sentiment function returns a data frame in which each row represents a sentence from the original file. The columns include one for each emotion type as well as the positive or negative sentiment valence. The example below calls the function using the simple twelve sentence example passage stored in the s_v object from above” (Cran, 2020).

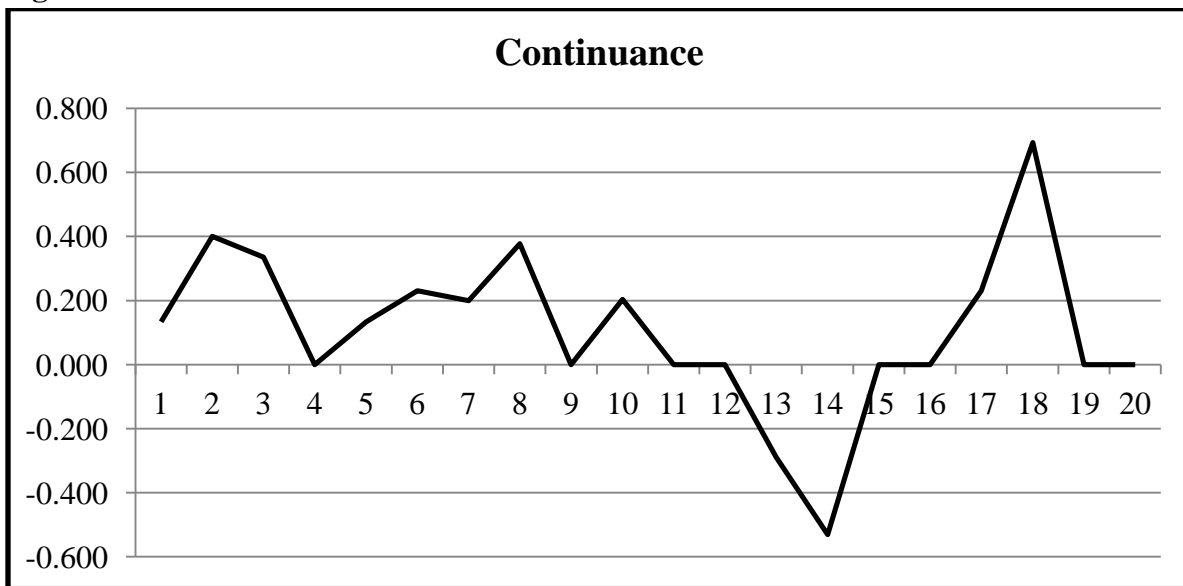
Sentiment scores have been used to develop the line chart (Figure 3), it is observed that there is variation in sentiments of respondents with regard to satisfaction. Figure 4 shows the sentiment through line chart for variable continuance of digital banking. Sentiment Analysis is a process of extracting opinions that have different scores like positive, negative or neutral.

Figure 3-Sentiment analysis



(Source: Developed using MS-Excel)

Figure 4-Continuance sentiment



(Source: Developed using MS-Excel)

Discussion and Conclusion

Consumers are having intention to use digital banking but they are concerned about security. Presently users are happy with the services offered by various digital payment apps. At the same time they would like to argue about two step verification. Some users have also suggested that receiver should also given password during offline shopping. It is found that users are expecting some more features for enhancement of security for digital payments. In future, cash transactions might be rare and many transactions take place in digital mode. Sentiment analysis is an important part of the emotion computing and wordcloud is a fancy way of text visualization. Combining the two, we can reveal and display people's attitude and perspectives through their comments or articles.

Future Research

In this study the sample size is small and the statements are few. There might impact of pandemic on consumer perception towards digital payments. There is need to understand the reasons for failure during digital payments. Digital payments have increased the burden on consumers because they need to have data for conducting such transactions. Overall longitudinal studies through qualitative approach are needed. This paper had been only initial step to integrate data analytics into marketing research. Python packages such as NLTK can be used for future researchers to conduct sentiment analysis.

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*Notes: R script (code) will be given on request through email.