Use of Digital Wallets- Cluster Analysis for Expectation and Voice of the Customers

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ABSTRACT

The present study is to know the customers' voice in the use of digital wallets. Primary Data collected from 354 working professionals using digital wallets is analyzed through cluster analysis using SPSS. Two clusters are found in the data first cluster consisting of 144 persons are categorised into not-happy towards the use of digital wallets. They feel digital wallet is an unsafe mode of payments. Also, they find it difficult to use. The second cluster of 210 working professionals have a positive attitude towards the use of digital wallets are canned as happy customers. Four variables challenging factors, customer satisfaction, and risk involved and suggested solution to use digital wallets are compared in both clusters. Rather these groups very enthusiastic in using digital wallet. They find it safe and easy. They do not seek working assistance in digital wallet. They also find it reliable and find it an unrestricted choice. They are very hopeful that slow speed of data transformation is not a big problem; they find it quick and efficient in service. Expectation of digital wallets can be termed as customers' voice. It is the basis for formulating engineers' voice for creating service. It can be used in creating a house of quality by digital wallet companies.

Key words: *Cluster, Cases, Digital, Wallet*

INTRODUCTION

The present study is based on cluster analysis of customers using digital wallet using interval data. John Saunders (1994) identified that cluster analysis is good for ratio or interval data. It is true for marketing strategy for customer segmentation in digital wallets too. Birgit–Leisen in (2001) in research based on different amenities for market segment identified four segments on cluster-based analysis found each segment for demographic profile and conferred about short term and long term for targeting the segments. Chin Feng (2002) also favored segmentation for a better understanding of customer preferences. Nikolaus Franke, Heribert Reisinger& Daniel Hoppe (2009) suggested addressing the potentially dark side of cluster analysis and suggested goodness of fit indices. John Saunders (1994) identified that cluster analysis is good for ratio or interval data. As per Lloyd C. Harris & Rebekah Russell-Bennett (2015) a cultural cluster analysis is to reflect values, beliefs and attitudes. They performed a qualitative analysis study based on depth interview of 60 consumers in UK and Australia and found significant differences in styles of complaints, parental influence as well as the conceptualization of complaints. Andrea K. Eberhart (née Moser) & Gabriele Naderer (2017) and Cristina Calvo-Porrala, Jean-Pierre Lévy-Mangin(2018), customers cannot be seen as a homogenous group. Segmentation through cluster analysis has identified two types of customers using digital wallet. Wenbin Sun & Joseph M. Price (2016) used cluster analysis to know marketing capability and research and development intensity regarding their influences on firm default vulnerability and to

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demonstrate how marketing capability may support research and development concentrations' power on risk reduction. Janet Hoek, Nicole Roling& David Holdsworth (2013)also used clustering to know buyers' increasing attention in moral ingesting is organized and considerate association amidst apprehensions and performance is not found significant. Market segmentation is important to know the customers' demographic perception but also psychographic perception for creating a suitable marketing strategy for products and services. Market segmentation is helpful to provide customized service required by different segments of consumers. No concerted effort has been made to clustering the users of digital wallets, on the basis of challenges faced by users, customer satisfaction in use of digital wallets, risk involved as perception of customers and suggestive measures by the customers to perceive customer satisfaction in the use of digital wallets, hence present study is undertaken using cluster analysis to know demographic and psychographic segmentation of the customers using digital wallets.

Four variables are taken into consideration under this study. First is Challenging factors to examine the impact of digital wallet on customer satisfaction by analyzing the problems faced by the customers in the selected wallets. The number that corresponds to customer's degree of agreement or disagreement with that statement keeping in mind Problems in Digital Wallet which includes ten statements like Unsafe mode of payments, difficult to use, Inadequate Working Assistance, not reliable, restricted choice, not reliable, limited language options, attack on privacy, slow speed of data transmission, receiving of fake SMS and spams. (Arora M,2018)

Customer satisfaction Huddleston et al. (2009)abstracted customer satisfaction with

A retailer as a result of the value provided by the spending practice. It is related to Impact on Customer Satisfaction which corresponds to your degree of agreement or disagreement with that statement include efficient management of funds, whether digital wallet is easy to use or not, it provides quickness to payment or not, use of digital wallets provides service efficiency or not. Customers voice were asked on the five-point Likert Scale. (Arora M,2018)

Risks: Due to digital wallet and factors responsible for these risks in the selected wallets are checked by some statements. The degree of agreement or disagreement with the Customers Risk Factors involved in Digital Wallet is judged through statements like Low Involvement of Service Providers, Poor Technological Architecture, Ambiguity in Consumer Protection Rules, No Consideration of Customers' Suspicion on the Business Model, Bad Experiences, Unawareness, Security Breaking and Misuse of Personal Information. (Arora M,2018)

Suggestions on Digital Wallet among the Customers is the fourth variable consisting of statements

for the expectation of customers like Implementation of Security Measures and Skilled Wallet Staff (Arora M,2018)

LITERATURE REVIEW

John Saunders (1994) identified that cluster analysis is good for ratio or interval data. Birgit – Leisen in (2001) in research based on different amenities for market segment identified four segments on cluster-based analysis found each segment for demographic profile and conferred about short term and long term for targeting the segments.

Chin Feng (2002) with the objective to utilize numerous segmentation factors and to identifying lesser, well-defined bull parts of markets to increase commercial modest rewards. Nikolaus Franke, Heribert Reisinger& Daniel Hoppe (2009) suggested addressing potentially dark side of cluster analysis and suggested goodness of fit indices.Lloyd C. Harris & Rebekah Russell-Bennett (2015) is cultural cluster analysis to reflect values, beliefs and attitudes. He performed a qualitative analysis study based on depth interview of 60 consumers in the UK and Australia and found significant differences in styles of complaints, parental influence as well as conceptualization of complaints. Wenbin Sun & Joseph M. Price (2016) Promoting proficiency as well as data analysis was used in up surging business progress and mitigating the risk of stakeholders. The study provided suitable repercussions for promotion models and commercial exercise. Janet Hoek, Nicole Roling & David Holdsworth (2013) Although buyers' increasing attention in moral

ingesting is organized and considerate association amidst apprehensions and performance is not found significant. In the context of systematic-heuristic and behavior change model, the research discovered customers' indulgent in diverse principled entitlements and detailed eco-label as well as projected spurs high-quality performances. Qualitative analysis using In-depth interviews exposed the robust attention for non-economical attributes but substantial skepticism for precise entitlements. Two separate clusters were identified - one was chiefly price-driven and the other more responsive to specific claims. Inconsistencies amid the findings raise important policy questions about the scientific basis of many ethical claims since consumers were strongly influenced by these, despite their views to the contrary. Andrea K. Eberhart (née Moser) & Gabriele Naderer (2017) made a study on the concepts and motives and heuristics for personal care products. A combined-method's slant syndicates real buying statistics using in-depth qualitative analysis for creating perceptions obtaining great external validity. Also, quantitative analysis was used for knowing the real purchase behavior of customers. Market-segmentation method was developed. It was found that group A customers were self-motivated and were more satisfied. Insights of these types of customers can be utilized positively by retailers and marketers. Cristina Calvo-Porrala, Jean-Pierre Lévy-Mangin(2018), customer cannot be seen in homogeneous group as there are cluster showing different characteristics of the customers.

Research Question

Regarding the proposed research question "what are the main expectations of users of digital wallets segment?"

To know the features of users we have to identify that whether segmentation is feasible in user of digital wallets. Dendrogram is a useful method at the initial level to identify the cluster. Following dendrogram shows that two clusters are possible. Expectation of digital wallets can be termed as customers' voice. It is the basis for formulating engineers' voice for creating service. It can be used in creating a house of quality by digital wallet companies.

OBJECTIVES

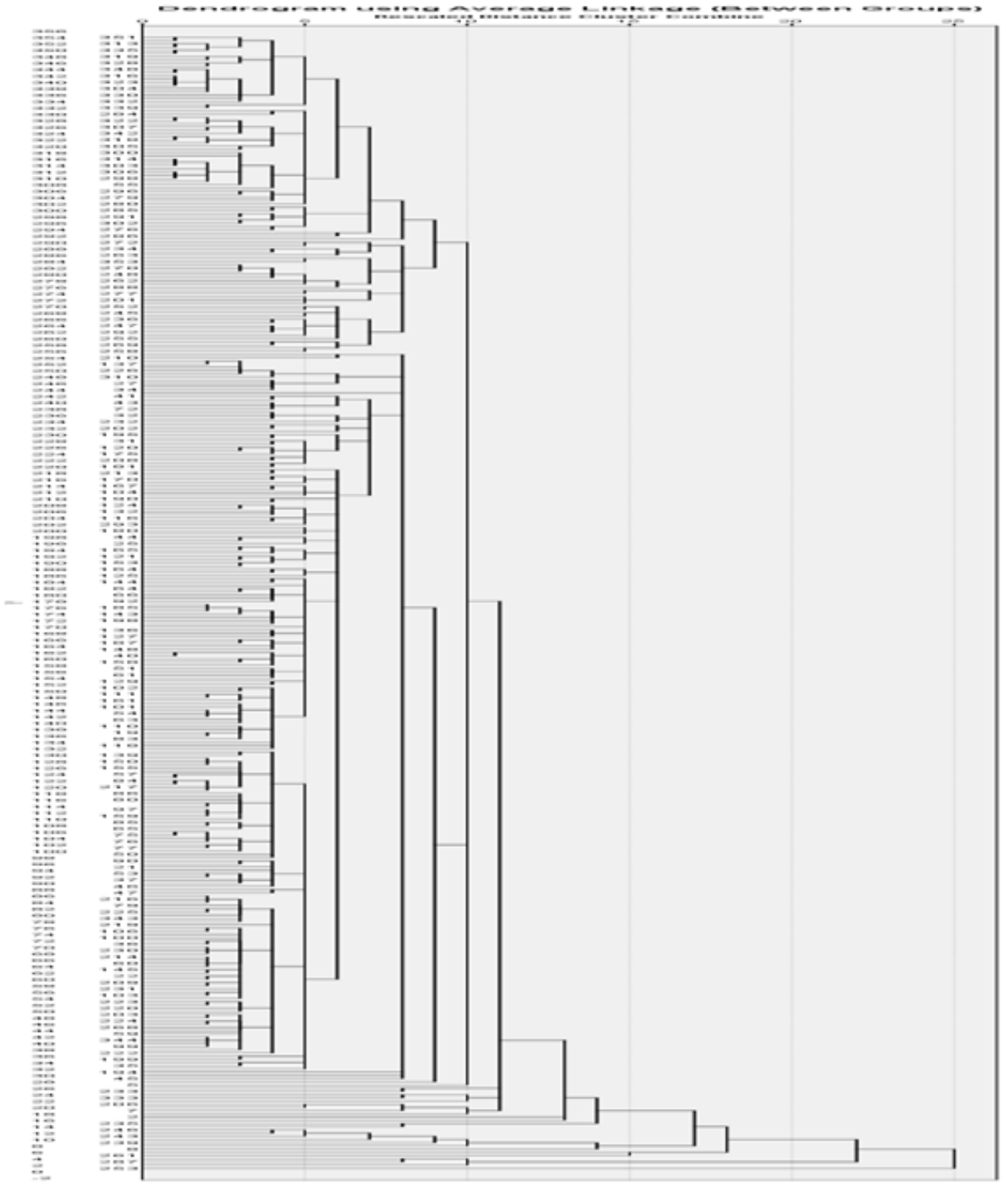
(i) To check the clusters if any, for segmentation in use of digital wallets.
(ii) To observe the customer voice in the use of digital wallets
(iii) To suggest measures matching marketer company voice for digital wallets with customer's voice

Data Assortment

Primary data have been collected from the customers selected by judgment sampling with the help of self-structured questionnaire on five-point Likert Scale i.e. Strongly Disagree (SD), Disagree (D), Indifferent (I), Agree (A) and Strongly Agree (SA). After examination, 354cases were used for cluster analysis. Secondary data have been extracted from the research studies and articles published in various journals, magazines, newspapers and websites.

Data Exploration

The composed data were analyzed through descriptive statistical techniques like cluster analysis using ANOVA, Dendrogram to identify the clusters and k-means for demographic and psychographic analysis through PASW 22.0 version.



The F tests given in Table 1 should be used only for descriptive purposes because the clusters have been chosen to maximize the differences among cases in different clusters. Two identified clusters can be considered for further study.

Table 1: ANOVA Analysis for clusters

Statements	Cluster Mean Square	F	Sig.
@1Unsafemodeofpayments	226.9	334.5	0.00
@2DifficulttoUse	210.5	289.6	0.00
@3InadequateWorkingAssistance	208.4	346.5	0.00
@4NotReliable	159.8	252.3	0.00
@5RestrictedChoice	162.3	227.1	0.00
@6IntellectualEffortsrequired	169.8	208.7	0.00
@7LimitedLanguagesOptions	109.4	120.8	0.00
@8AttackonPrivacy	114.7	160.9	0.00
@9SlowSpeedofDataTransmission	138.7	202.9	0.00
@10ReceivingofFakeSMSandScams	138.6	142.8	0.00
@1EfficientManagementofFunds	14.4	21.4	0.00
@6Quickness	2.0	3.5	0.06
@7ServiceEfficiency	7.4	12.2	0.00
@1LowInvolvementofServiceProviders	50.6	90.4	0.00
@2PoorTechnologicalArchitecture	14.1	19.2	0.00
@3AmbiguityinConsumerProtectionRules	10.7	18.4	0.00
@5NoConsiderationofCustomersOwnTermsampSetPreferenc	15.9	29.5	0.00
@6Suspicionon the4Model	14.8	21.2	0.00
@7BadExperiences	39.0	45.1	0.00
@8Unawareness	16.5	20.8	0.00
@9SecurityBreaking	17.5	24.1	0.00
@10MisuseofPersonalInformation	16.1	21.6	0.00
@1ImplementationofSecurityMeasures	3.2	5.8	0.02
@3SkilledWalletStaff	5.4	7.3	0.01

df=1 df=352

The observed significance levels are not corrected for this and thus cannot be interpreted as tests of the hypothesis that the cluster means are equal

As shown in Table 2, 144 cases represent cluster 1 and 210 cases in cluster 2, means are shown in Table 3. Mean for Difficult to use is 2.1 which is the minimum of all the problems or challenges faced by users of digital wallets. It means they do not find it easy to use digital wallet. It can be said that attack on privacy which is highest (3.1) for challenges in using digital wallets. It shows customers do not find safe as they consider that using digital wallets may reveal their personal information to the third party. Still, customer of cluster one is not very positive for using digital wallets. If we discuss about customer satisfaction, they find it is a way of efficient management of funds 3.7) but not find it so quick (4.3).

Table 2: Number of Cases in each Cluster

Cluster	No. of cases
1	144
2	210

As far as the risk involved is concerned cluster 1 find responsible to poor infrastructure (3.2) and again personal information is at stake (3.9) as per their discretion, if they choose to use digital wallets. Rather cluster 2 does not assume bad experience (4.3). Even they are trust about not leakage of personal information (4.3). Skill wallet staff for providing a solution to queries of customers is the solution both cluster 1 (4.1) and 2 (3.8) believes this phenomenon.

Table 3: Final Cluster Centres in use of digital wallets

Variables	Statements	Cluster 1 Means	Cluster 2 Means	
Challenging factors in digital wallet	@1Unsafemodeofpayments	2.7	4.3	
	@2DifficulttoUse	2.1	3.7	
	@3InadequateWorkingAssistance	2.3	3.9	
	@4NotReliable	2.5	3.9	
	@5RestrictedChoice	2.5	3.9	
	@6IntellectualEffortsrequired	2.4	3.8	
	@7LimitedLanguagesOptions	2.4	3.6	
	@8AttackonPrivacy	3.1	4.2	
	@9SlowSpeedofDataTransmission	2.7	4.0	
	@10 Receiving of Fake SMS and Scams	2.8	4.1	
Customer Satisfaction	@1 Efficient Management of Funds	3.7	4.1	
	@6 Quickness	4.3	4.1	
	@7 Service Efficiency	4.0	3.7	
Risks Involved	@1 Low Involvement of Service Providers	3.4	4.2	
	@2 Poor Technological Architecture	3.2	3.6	
	@3 Ambiguity in Consumer Protection Rules	3.5	3.8	
	@5 No Consideration of Customers Own Terms and Set Preference	3.7	4.1	
	@6 Suspicion on the 4Model	3.4	3.8	
	@7 Bad Experiences	3.6	4.3	
	@8 Unawareness	3.8	4.2	
	@9 Security Breaking	3.8	4.2	
	@10 Misuse of Personal Information	3.9	4.3	
Solutions to	@1 Implementation of Security Measures	4.3	4.5	
	@3Skilled Wallet Staff	4.1	3.8	

There is no significant difference based on gender as an almost equal number of male and females are classified in both clusters as per Table 4. Age wise it is observed that 60.7 percent are in cluster 2 in comparison to 40.5 percent in cluster 1, it can be stated that young millennial age 18-35 years are more satisfied in using digital wallets. But in the age group 36-50 years, the picture is reversed. 52.2 percent are in cluster 1 and 32.8 percent in cluster 2, which shows they are not satisfied with the services of digital wallets. There is not a big cluster difference in age group 51-70 as 7.3 percent in cluster 1 and 6.6 percent in cluster 2.

Table 4: Cluster center of Demographic

Demographic		Cluster 1	Cluster 2
Gender	Male (Number)	119	113
	% of male in each cluster	51.3	48.7
	Female (Number)	61	61
	% of female in each cluster	50.0	50.0
Age	Age		
	18-35 Years (Number)	94	74
	36-50 years (Number)	121	40
	51 to 70 years (Number)	17	8
	Total	232	122
	Percentage of age 18-35 Years in each cluster	40.5	60.7
	Percentage of age 36-50 Years in each cluster	52.2	32.8
	Percentage of age 51-70 Years in each cluster	7.3	6.6
Occupation	Student (Number)	45	40
	Private Job (Number)	88	28
	Government Job (Number)	39	10
	Business (Number)	24	20
	Profession (Number)	22	11
	Any Other (Number)	14	13
	Total	232	122
	Percentage of studentin each cluster	19.4	32.8
	Percentage of private job employeein each cluster	37.9	23.0
	Percentage of government job employeein each cluster	16.8	8.2
	Percentage of businessman in each cluster	10.3	16.4
	Profession	9.5	9.0
	Percentage of any other occupation in each cluster	6.0	10.7
	Total	100.0	100.0
Qualification	Under Graduate (Number)	43	50
	Post Graduate (Number)	166	59
	PhD (Number)	18	4
	Others (Number)	5	9
	Total (Number)	232	122
	Percentage of under graduatesin each cluster	18.5	41.0
	Percentage of post graduatesin each cluster	71.6	48.4
	Percentage of PhDin each cluster	7.8	3.3
	Percentage of otherin each cluster	2.2	7.4
	Total	100.0	100.0

RESEARCH FINDINGS

Cluster analysis: In the present study hieratical cluster method is developed in order to identify and classify users of mobile wallet. Our results demonstrated a two-cluster solution was appropriate, shown in Figure 1 dendrogram using average linkage. The segmentation derived from the cluster analysis is valid, as the F-ratios computed through ANOVA analysis revealed in Table 1 that the cluster differs significantly. As shown in Table 2, 144 cases represent cluster 1 and 210 cases in cluster 2. Final cluster center in table 3 make obvious that Cluster 1 treats digital wallet as an unsafe mode of payment (2.7), also this cluster finds difficult to use (2.1). This type of respondents also finds inadequate working assistance. They also question the reliability of using digital wallet (2.3), their choice is restricted while using digital wallets. (2.5). Student's percentage in cluster 1 is only 19.4 but it is 32.8 percent in cluster 2, it shows students have a positive perception about using digital wallets. But in the case of private job employees, the situation is reversed. 37.9 percent are falling in cluster 1 and 23 percent in cluster 2. Also, employees in government job are having the same scenario. 16.8 percent government employees are cluster 1 and 8.2 in cluster 2. Also the businessmen 10.3 percent are in cluster 1 and 23 percent are in cluster 2. But again, the situation is different in cases of any other profession. Cluster 2 is significantly high responsiveness 10.7 are cluster 2 in comparison to 6 percent in cluster 1. It shows that students and people in other professions have a positive perception regarding using digital wallets.

Cristina Calvo-Porrala, Jean-Pierre Lévy-Mangin(2018), a customer cannot be seen in homogeneous group, Second, cluster of 210 working professionals have a positive attitude towards the use of digital wallets. Rather these groups very enthusiastic in using digital wallet. They find it safe and easy. They do not seek for working assistance in digital wallet. They also find it reliable and find it an unrestricted choice. They are very hopeful that the slow speed of data transformation is not a big problem; they find it quick and efficient in service. Demographic results for targeting for digital wallets are similar on the research by Birgit – Leisen in (2001) also segmented on a demographic basis for targeting.

Student's percentage in cluster 1 is only 19.4 but it is 32.8 percent in cluster 2, it shows students have a positive perception about using digital wallets. But in the case of a private job employee, the situation is reversed. 37.9 percent are falling in cluster 1 and 23 percent in cluster 2. Also, employees in government job are having the same scenario. 16.8 percent government employees are cluster 1 and 8.2 in cluster 2. Also the businessmen 10.3 percent are in cluster 1 and 23 percent are in cluster 2. But again, the situation is different in cases of any other profession. Cluster 2 is significantly high responsiveness 10.7 are cluster 2 in comparison to 6 percent in cluster 1. It shows that students and people in other professions have positive perception regarding using digital wallets.

SUGGESTIONS

As two clusters are identified, service for digital wallets can be segregated as per recommended clusters. The first cluster is not too techno-savvy and do not find the digital wallet safe. For that type of customer, some assurance is required to be provided to these types of customers. Confidentiality of not leaking the private information will work for betterment. For cluster two type of customers, as they are positively in using digital wallet. This should be taken as an opportunity for the growing use of digital wallets. Their transaction frequency can be increased using white good and other big transactions. It can be further used for B2B transactions too. There is no significant difference based on gender as an almost equal number of males and females are classified in both clusters. That is the reason that remedial measures should not be differentiated for gender demography. But age-wise it is observed that higher percent are in cluster 2 in comparison to cluster 1, it can be stated that young millennial age 18-35 years are more satisfied in using digital wallets. More efforts should be done for the age group 36-50 years. The expectation of digital wallets can be termed as customers' voice. It is the basis for formulating engineers' voice for creating service. It can be used in creating a house of quality by digital wallet companies.

CONCLUSIONS

The present study gives a comprehensive segmentation based categorization of users of digital wallets. Regarding the proposed research question

"what are the main features of users of digital wallets segment?" our finding reports that users of digital wallets cannot be seen as a homogeneous group. Further, the study identifies two types of digital wallet users. Consequently, different profiles have been described. The obtained digital wallets users are labeled as techno shrewdness and non-engrossed. Techno shrewd is the most attractive segment for digital wallet since they are strongly favoring the possibilities. The major contribution of the research is providing a cluster based categorization of digital wallet users, which may help companies to better understand the needs in order to target the different customer segments. Consequently, digital wallet companies may consider digital wallets as two types of provider instead of one. This study has limitations that represent an opportunity for further research. First, this study is based on digital wallet and this cannot be generalized for other banking options. Second, the data collected in 2018, so data collected in future time may present different clusters. Addressing these views of limitations may provide future researcher scope for a deeper view.

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