

Design Research Seminar

Diffusion of Service Innovation in India

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Approval Sheet

The Design Research Seminar entitled "Diffusion of Service Innovation in India" by Vishnu K, roll number-176330006 and Rajesh.P - 176450008 is approved, in partial fulfilment of the Masters in Design Degree at IDC School of Design, Indian Institute of Technology, Bombay.

 Pramod Khambete
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Signature of Guide:

Declaration

I hereby declare that this written submission submitted to IDC, IIT Bombay, is a record of an original work done by us. This written submission represents my idea in my words, I have adequately cited and referenced the original source. I also declare that I have adhered to all principles of academic honesty and integrity and have not misprinted or falsified any Idea/ fact/ source in my submission. I understand that any violation of the above will be cause for disciplinary action by the institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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1. Abstract

As new companies which leverages on smart phones to provide innovative services are becoming more and more common, there is a need to understand what leads to the adoption of these services. Diffusion of Innovation (DOI) Theory proposed by Everett M Rogers provides a framework to understand various factors involved in the diffusion of innovations. In this study, we *analyse* the diffusion of new service innovations by looking at two services, PayTM and Swiggy. The study focused on post-graduate students of IIT Bombay who would fit into the user category of *innovators* and *early adopters*, as defined by DOI theory.

We conducted interviews with the students to understand their experience with PayTM and Swiggy and identified important factors that led to the adoption of these service innovations. This data was mapped to the variables that affects the rate of adoption of innovations, as defined by DOI theory. The study finds that some variables have more importance in the diffusion of the two service innovations considered, among students of IIT Bombay. The study suggests that DOI framework still holds a good framework to understand the diffusion of innovations, but it has to be modified to incorporate factors as demanded by the context.

2. Introduction

Diffusion of Innovation (DOI) Theory was proposed by Everett M Rogers in 1962, by studying literature related to innovation studies. DOI theory is one of the most cited theory in diffusion studies. Based on the innovativeness of the individuals, the theory categorises individual into five categories; innovators, early adopters, early majority, late majority and laggards. They sequentially adopt an innovation; innovators first, followed by early-adopter and so on. [1] The adoption of an innovation by one category is dependent on the previous category, as users gather information about the innovation from the previous category to reduce the uncertainty about the innovation. [2] With changes in the technology landscape in India, a variety of new services have emerged which take advantage of the mobile phone platforms to deliver innovative

services. These service innovations have good acceptance in Indian cities as it provides values which the earlier services could not offer.

PayTM is one of the most widely used mobile wallet applications in India. Started in 2010 as a mobile recharge service, PayTM has evolved into a company which offers services including recharges, payment for other online and offline services, storing money in a digital wallet and transferring directly from wallets as well as from bank accounts. The demonetization in India from 8 Nov 2016 to 30 Dec 2016 has contributed to the increased use of PayTM services [3] Studies at different contexts have shown that the adoption of PayTM among young population happened prior to demonetization but demonetization has caused adoption of PayTM among shopkeepers and vegetable vendors[4]. PayTM has implemented various marketing strategies to increase adoption among shopkeepers, leveraging the cash crunch created due to demonetization. Online food delivery services have seen increased use in Indian cities in the recent years. Swiggy is one of the most used among such services. Online food delivery services allow customers to have food from a variety of restaurants delivered at their doorstep. This add more value to customers who are migrated to cities for studies or jobs.

In this study, we have analysed these two services and factors that may have led to its adoption among students who are residents of IIT Bombay. Diffusion of Innovation Theory proposed by Everett M Rogers is used as a guide to understand the variables associated with diffusion of these service innovations. The data collected about the two services and their strategies from secondary sources were mapped to the variables from Diffusion of Innovation Theory. Interviews were conducted and the responses were analysed to understand the variables that lead to rate of adoption of innovation. The study focused on students who pursue postgraduate courses at IIT Bombay. For PayTM, the user group is students who use PayTM smartphone application for wallet and online payment. For Swiggy, the user group considered is students who order food through Swiggy food delivery service.

3. Diffusion of Innovation Theory

Diffusion of Innovation theory proposed by Everett M Rogers holds as a general framework to understand the diffusion of innovation process. According to Rogers (1962), "Diffusion is the process by which an innovation is communicated through certain channels over a time among the members of a social system." The diffusion of innovations are characterised by four elements; the innovation itself, communication through certain channels, time and the social system in which diffusion takes place. [5]

"An innovation is an idea, practice or object that is perceived as new by an individual or other unit of adoption." [6] The earlier a user is in adopting an innovation, the more innovative they are. This factor is used to categorise users into five adopter categories: innovators, early adopters, early majority, late majority and laggards. [7]

Among the attributes of innovation, studies with farmers in different contexts have shown that different attributes have importance in different contexts in adopting innovations. [8]. In some contexts profitability, in some contexts observability, in some contexts compatibility and in some contexts a mix of two or more attributes. A later study has shown that various attributes are complementary in nature and not substituting. [9]

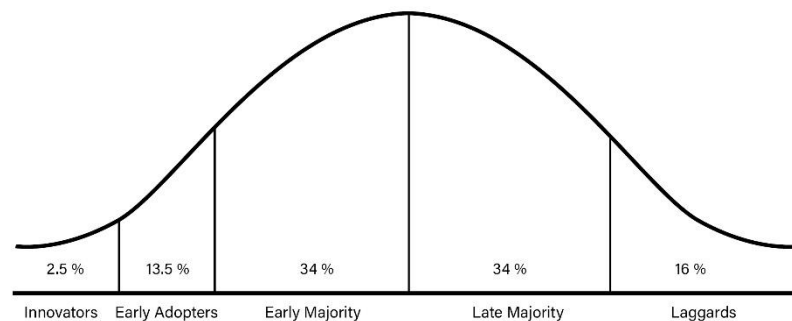


Figure 1 – Adopter categories

a. Variables determining rate of adoption

Rate of adoption determines how fast an adoption is diffused among individuals in a social system. It is measured in terms of number of individuals. Variables that determine the rate of adoption of innovations are classified into five categories:

4. Perceived attributes of innovations
5. Type of innovation decisions
6. Communication channels
7. Nature of the Social System
8. Extent of Change Agent's promotion efforts. [11]

The sub-variables that affect the rate of adoption of innovations are shown in (Figure 2)

The perceived relative advantages of innovation in terms of economic profits, incentives provided by the agencies, improvement in social status of an individual and the fear of missing out in non-adoption (preventive innovation), positively affects the rate of adoption. [12] If the innovation is compatible with the values, practices and needs of the users, there is more chances of adoption. Undesirable experiences with an innovation in the past can create a mentality in the users to not-adopt similar innovations (innovation negativism) [13]

Studies have shown the existence of stages in the innovation-decision process; the stages are knowledge, persuasion, decision, implementation and confirmation. [14] According to DOI, mass media channels have more importance at the knowledge phase of the diffusion process whereas individual channels have more importance in the decision phase. [15]

Diffusion spreads faster if the decision to adopt or reject is taken by an individual, as compared to an authority or if the decision is taken by a group of people. [16] Companies employ change agents, who talk to individuals explaining the advantages of adoption a particular innovation. Change agents also play a key role in influencing the adoption of new innovations. [17]

This study was conducted on students who are pursuing masters degree at IIT Bombay. Based on the personal characteristics of the user group, they fall under the *innovator* and *early adopter* categories, as defined by the DOI theory. Users were present at different places at the time of adoption. Data from secondary sources suggested that the selected service companies have not involved change agents to diffuse the innovation for the considered user group. Therefore, we decided to focus our study on the role of remaining two variables; perceived attributes of innovation and communication channels, in the innovation diffusion process

b. Other theories in technology adoption.

Apart from Diffusion of Innovation Theory, there are other models such as different versions of Technology Acceptance Models, Theory of Planned Behaviour, Theory of Reasoned Action, Unified Theory of Acceptance and Use of Technology etc.[10] These models also explain the adoption process from different perspectives, but this study is specifically looking at DOI theory and understand how it holds in the context of new service innovations.

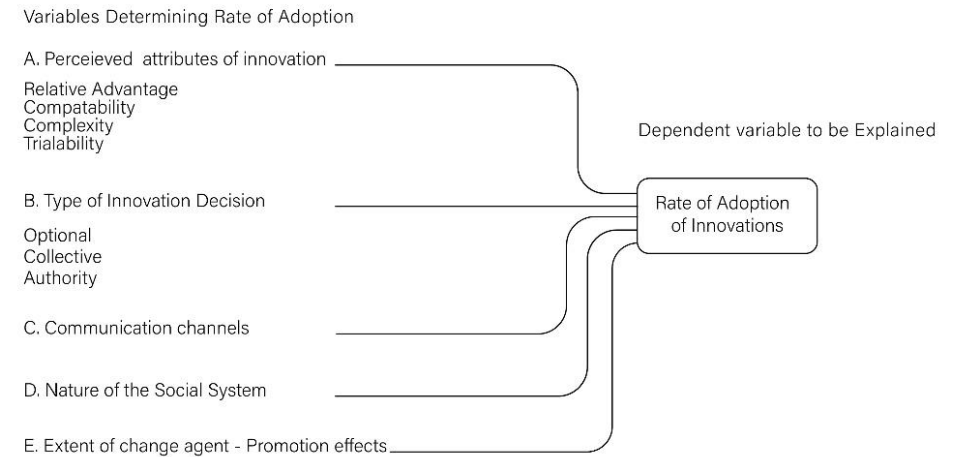


Figure 2- variables determining rate of adoption

4. Methodology

c. Mapping variables with strategies adopted by services

Data was collected from secondary sources and by studying the services and the collected data was mapped to the variables as defined by Diffusion of Innovation Theory. (Figure 3 & 4)

d. Hypothesis

Based on the data collected from secondary sources and using DOI as a guide, the following was hypothesized for the adoption of PayTM and Swiggy among students of IIT Bombay.(Figure 5)

e. Interviews

Interviews were conducted with 14 users who have adopted both PayTM and Swiggy and use them currently. The age of the users were between 23 - 30. Interview with one user took 30 mins to 45 minutes. Users were asked questions related to the adoption of both the services during the first stage of the interview process. In the second stage, users were asked questions related to the variables from DOI theory.

		Perceived Attributes of Innovation											Comm.Ch	
S.No	Strategies by PayTM	Relative Advantage				Compatibility				Ob	Tr	Cx		
		EP	SS	PI	IN	V	PI	N	IN				MM	IN
1	Provides special discounts for payment through PayTM app				●						●			
2	Tied up with other services(Uber, Swiggy etc.) to use PayTM as a payment option							●	●	●		●		
3	Added online shopping section as part of PayTM app to increase use of wallet				●						●			
4	Cashbacks and offers for referrals				●					●	●			●
5	Communicated the advantage(safety) in keeping money in the wallet compared to bank accounts, its distinction from online banking etc.							●					●	
6	Campaigned to demonstrate how PayTM fits into day to day life of users and culture through advertisements					●		●					●	
7	Using social media platforms and creating 'viral' video content that would reach maximum customers									●				
8	Video advertisements to show the safety and security of money in PayTM wallet												●	
9	Transferr ing money through wallet is easier than online banking							●					●	
10	Usefulness of PayTM in cases where users have to tender exact change, reducing need to carry cash	●						●					●	
11	Social Media campaigns using hashtags													●
12	Sharing user's experiences while using PayTM through advertisements													●
13	Title sponsors for Indian cricket team, thereby providing maximum visibility									●			●	
14	Interaction is much simpler than using a internet/mobile banking interface. Not much information overload, no complex passwords etc.								●				●	
15	Displaying QR code, PayTM logos etc in the shops									●				
16	No charge on transactions using PayTM service	●						●			●			

Relative Advantage		Compatibility		Communication Channels		Ob Observability		Tr Trialability		Cx Complexity	
EP	Economic profitability	V	Values and believes	MM	Mass Media						
SS	Social status	PI	Previous ideas	IN	Interpersonal Channels						
PI	Preventive innovation	N	Needs								
IN	Incentives	IN	Innovative Negativeness								

Figure 3 – Mapping secondary data about PayTM with variables determining rate of adoption

S.No	Strategies by Swiggy	Perceived Attributes of Innovation											Comm.Ch	
		Relative Advantage				Compatibility				Ob	Tr	Cx		
		EP	SS	PI	IN	V	PI	N	IN				MM	IN
1	Service can be availed through multiple touch points (app, website, phone call)							•			•			
2	Students can order from restaurant of their choice sitting in their room	•	•					•				•		
3	Tracking option removes ambiguity of the service. Customers can see when their order is arriving											•		
4	Delivery boys wearing Swiggy branded clothes, bags etc.									•				
5	Cashback, discounts and offers.	•			•						•			
6	Campaigns on social media with hashtags									•			•	
7	No minimum order limit in the service										•			
8	Food delivered in branded packages, tissues, cutlery etc.									•				
9	Emotional Marketing by delivering their home cooked food to customers					•								
10	Pasting Swiggy logos etc. in shops to let customers know that Swiggy covers that restaurant									•				
11	Sending messages about offers directly to customers												•	
12	Providing options for payment through multiple channels							•				•		
13	Attractive discounts for first time users				•						•			
14	Specialized services like Swiggy Pop for premium customers	•						•				•		
15	Multiple payment options provided as per the need of the customers						•	•			•	•		
16	Cashbacks and discounts from portals where Swiggy has partnership				•									
17	Provide multiple options to choose from instead of a few restaurants					•		•			•			
18	Advertisement campaigns to show the advantages of Swiggy									•			•	
19	Options to share the deals with friends and family							•		•				•
20	Coupons and discounts for referring to other people				•									•

Relative Advantage		Compatibility		Communication Channels		Ob	Observability	Tr	Trialability	Cx	Complexity
EP	Economic profitability	V	Values and beliefs	MM	Mass Media						
SS	Social status	PI	Previous ideas	IN	Interpersonal Channels						
PI	Preventive innovation	N	Needs								
IN	Incentives	IN	Innovative Negativeness								

Figure 4 – Mapping secondary data about Swiggy with variables determining rate of adoption

Diffusion Of innovation Variables			PayTM	Swiggy
Attributes of innovation	Relative Advantage	Economic Profitability	Economic profitability perceived by users has contributed in adoption of PayTM	Economic profitability perceived by users has contributed in adoption of Swiggy
		Social Status	Gain in social status perceived by users has contributed in adoption of PayTM	Gain in social status perceived by users has contributed in adoption of Swiggy
		Incentives	Incentives provided by PayTM to its users helped in its adoption	Incentives provided by PayTM to its users helped in its adoption
		Preventive Innovation	Users adopted PayTM to avoid an undesirable change in the future	Users adopted Swiggy to avoid an undesirable change in the future
	Compatibility	With values and beliefs	Compatibility of PayTM with values and beliefs of users helped in its adoption	Compatibility of Swiggy with values and beliefs of users helped in its adoption
		With current practices	Compatibility of PayTM with current practices of users helped in its adoption	Compatibility of Swiggy with current practices of users helped in its adoption
		With user needs	Compatibility of Swiggy with user needs helped in its adoption	Compatibility of Swiggy with user needs helped in its adoption
		Innovation Negativism	Undesirable experience with other similar service caused non-adoption of PayTM	Undesirable experience with other similar service caused non-adoption of Swiggy
	Observability	Observability	Observability of PayTM brand helped in its adoption	Observability of PayTM brand helped in its adoption
	Trialability	Trialability	Trialability of PayTM service helped in its adoption	Trialability of PayTM service helped in its adoption
	Complexity	Complexity	Complexity of PayTM service caused its non-adoption	Complexity of PayTM service caused its non-adoption
Communication Channels	Mass Media Channels	Communication Channels	Communication by PayTM through mass media channel at knowledge stage of Innovation-Decision process has helped in its adoption	Communication by PayTM through mass media channel at knowledge stage of Innovation-Decision process has helped in its adoption
	Personal Channels	Social Structure	Communication through interpersonal channels at decision stage of Innovation-Decision process has helped in its adoption	Communication through interpersonal channels at decision stage of Innovation-Decision process has helped in its adoption

Figure 5 – Hypotheses based on variables determining rate of adoption

5. Insights and Discussion

The interview responses were analysed and the observations are given below:

a. Attributes of Innovation

i. Relative Advantage

Economic Profitability along with Incentives were the most important factors in the adoption decision. The strategies used by the service companies to give initial offers to diffuse the service and create a behaviour has worked out well with the user group. Social status and preventive innovation was not found to be an important factor in the adoption decision.

ii. Compatibility

Compatibility with values and beliefs and current practices is not an important factor among the studied users. Users said that they try to explore and find out new services which can provide better experiences. Compatibility with needs is one important variable which has led to the adoption of PayTM and Swiggy. In case of PayTM, removing the hassle of carrying cash and keeping exact change was a common factor identified by majority of the users. In Swiggy's case availability of food at doorstep from a variety of restaurants in the city served value compared to existing services. Innovation negativism is not a contributing factor for non-adoption and its reverse was observed. For e.g. four users had told that they tried PayTM because they faced difficulties one other similar service.

iii. Observability

According to users, observability was not an important factor in the adoption. This may be because the user group belongs to the *innovators* and *early adopters* and they develop adoption decisions based on their own evaluation of the services.

iv. Trialability

Trialability was an important factor in the adoption. In case of PayTM, no initial investments from the user along with incentives motivated them to try the service whereas in case of Swiggy, no minimum order limit along with discounts and other incentives was an important factor in trying out the service.

v. Complexity

Complexity is not considered a significant factor in the adoption decision, as felt by the users. Users commented that Swiggy has an easy and less confusing interface which is not the case with PayTM.

b. Communication Channels

Majority of the users were unaware of advertisements and campaigns through mass media channels such as TV. Information about the services were consumed through social media. Individual communication is limited to sharing referrals and coupons through apps like WhatsApp.

c. Other observations

Due to the increased use of digital money and most of the incentives being in the form of digital money, the distinction between economic profitability and incentives are getting diminished.

Interpersonal communication at the decision stage is not an important factor in the adoption as users were found to have taken decisions on their own. This may be due to the change in nature of the services itself. The services does not require investments and consequences are minimal in case of failure. Information about the services at the knowledge stage is mainly through social media. Variables related to communication channels need to be looked in terms of the change in landscape and behaviour due to social media. Factors which were important in terms of earlier innovations in areas of technological investments in agriculture such as social status, innovation negativism and preventive innovation does not have much prominence in new service innovations.

Interdependence of Services: It was observed that majority of users started using wallet service offered by PayTM because of its usage in Uber, an online cab booking service. Few users find it convenient to pay through PayTM while ordering food from Swiggy. The interdependence of new services is a factor in their adoption and continued usage.

d. Limitations of the study

This study was conducted on a small user group and the qualitative observations cannot be considered as conclusive evidence. Because the study was about adoptions in the past and conducted at only one point in time, recall problems may have affected the user responses. The study only considered Diffusion of Innovation Theory due to time constraints. Other models could explain adoption through different perspectives.

6. Conclusions

Diffusion of Innovation Theory proposed by Everett M Rogers provides a guide to understand the adoption of services, even though the theory was proposed based on studies from different fields. This study looked at the diffusion of two service innovations; PayTM and Swiggy, and understood the variables that led to the adoption of these innovations among students of IIT Bombay. Qualitative observations collected through interviews suggest that Diffusion of Innovation Theory is still a valuable framework in explaining some variables, but the variables needs to be looked in terms of changes in technology landscape and user behaviour.

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