

INDIAN E-COMMERCE CONSUMER AND THEIR ACCEPTANCE TOWARDS CHATBOTS

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ABSTRACT

India is evolving at a fast pace in terms of technology and the consumer's behaviour towards it. This study is focused around understanding the consumer behaviour towards chatbot, a form of artificial intelligence in India. This study incorporated new and relevant factors - enjoyment, technicality, and perceived risk into the Technology Acceptance Model (TAM) to fill the literature gap to analyses the consumer's behaviour towards chatbots on e-commerce sites in India. Based on literature review and supported with the first stage sequential mixed method exploratory research, the paper summarises and aggregates the results of a pilot study on 237 e-commerce consumers of India. It applies principal component analysis in order to extract the factors which may impact consumer's attitude towards chatbots and their subsequent usage intentions. Study contributes to the sparse academic and empirical work on chatbot, a form of artificial intelligence in consumer services. The empirical results are initial steps towards the development of a measurement scale for measuring consumer behaviour towards chatbots in the later stage. Principal component analysis results in eight factors namely, perceived usefulness, ease of use, excitement, technicality, perceived ease, perceived value, attitude towards chatbots and intention to use chatbots. The paper concludes with theoretical and practical implications followed by directions for the future research. This study incorporated new and relevant factors - enjoyment, technicality and perceived risk into the TAM to fill the literature gap and deepen and broaden existing theoretical frameworks of the TAM in the Chatbot sector.

Keywords: Chatbots, Artificial Intelligence, Usage Intentions, Attitude towards Chatbots, Enjoyment, Technicality, Perceived Risk.

INTRODUCTION

The technology of artificial intelligence (AI) has made the science fiction possible in our daily life. This technology has explored almost all the areas such as health care, fraud detection and one of the most prominent usages of AI can be observed in the e-commerce world. AI is usually seen as robotics but it has a broad spectrum of technology such a machine learning, natural language processing (NLP), gaming systems, learning systems and object detection (Greenberg, 2017). AI is a very sophisticated technology to inculcate in online customer services experience as it enables personalisation and interaction, which can enhance the overall customer e-satisfaction and revenue of e-commerce sites. Many e-commerce companies such as Amazon, Myntra, Flipkart etc have realised that mere web presence is not sufficient to retain the customer and it is important to embed the technology such as AI to ensure a better user interaction. Gradually AI is shrinking the gap between physical and online store. With the integration of AI technologies such as machine learning, deep learning, augmented reality, Virtual try-ons,

Avatars and Chatbots in a website, the e-retailers are achieving the objective of providing convenience to customers and improving their online shopping experience. Artificial intelligence (AI) is the concept of intelligent machines that can carry out tasks and enhance them by learning from its own interaction experience (Geisel, 2018).

They provide valuable automated solutions to complex problems (Crittenden et al. 2019). Chatbots are one of such AI technology that enables automated communication between e-commerce sites and their customers.

Chatbots powered by AI will revolutionize the E-commerce industry in the upcoming years. Chatbots will be able to quickly respond to customer inquiries with the highest accuracy based on the data collected by them. This enable e-commerce stores to reduce their customer service staff as most of the queries will be resolved by the chat bots automatically. AI assistants will help to complete tasks that would otherwise require dedicated human interaction such as inventory or handling inquiries. This papers explore the concept of chatbots in the developing economy of India and aim to uncover it from the perspective of consumers on various ecommerce websites. Paper adopts the technology acceptance model, associate it with chatbots and extend it by adding few more aspects such as technicality, excitement and perceived risk. The primary objective of the study is to analyse important factors that results in perceived value and risk relating to chatbots from the perspective of customers on various ecommerce websites. Current research address the literature gap by proposing a conceptual framework which is at its initial phase of empirical testing and present preliminary results of principal component analysis and reliability statistics. This is the first study which has tried to relate chatbots with TAM and conceptualised a theoretical framework by collecting evidences from literature and conducting a pilot test along with extraction of factors under the study.

This paper is organized as follows: firstly, literature review on chatbots and TAM was presented, followed by proposed hypotheses and research model. It applies principal component analysis in order to extract the factors which may impact consumer's attitude towards chatbots and their subsequent usage intentions. Paper concludes with Findings, contribution and limitations are discussed.

LITERATURE REVIEW

Chatbots

The term "*chatbot*" is a portmanteau word which combines the verb "chatting" and the noun "*robot*" (Rese et al., 2020). Chatbots utilised NLP for real-time communication to advise or support. In the current e-commerce scenario, chatbots are popular for assigning to the sales at about 41% and support fuctions that stand at 37% of the e-services provided (Ashfaq et al., 2020). As a matter of fact, customers often feel frustation and dissatisfaction due to information overload on websites that lead to unanswered queries, long waiting times, inflexible working hours of e-commerce website (Zumstein et al., 2017). Chatbots are able to provide a more convenient, interactive and unique alternative to traditional customer service (Chung at al., 2020). Chatbots provide 24*7 assistance support to the customer (Zumstein et al., 2017), its mood is never impacted from anything, this extending more care and kindness towards the consumer far from stress and tired human feeling (Luo et al., 2019).

The chatbot has the ability of decision making with minimum error rate through its operating system (Kaplan et al., 2019) for instance to analyze the incoming text through a

pattern- matching approach, thus identifying the keywords, phrases and sentence constructions (Rese et al., 2020; Nguyen et al., 2018). This not only allows to systematically respond to the customer, but also to predict his or her behavior, sense the emotions as well as identify specific product preferences. This collected data is then immediately stored and used for conversations in the future. Chatbots have actually the ability to record a conversation history to which they can refer back by using their artificial memory, in order to be able to formulate more satisfying and tailored responses (Nguyen et al., 2018; Kohler, 2011).

Supporting Theory: Technology Acceptance Model

This study has utilised Technology Acceptance Model (TAM) that is specially designed for examining the acceptance of information systems. Hence, it will be appropriate to use it for understanding the consumer acceptance and behaviour towards the latest artificial intelligence technology in customer services i.e; chatbots. TAM puts forth two determinants, perceived usefulness and ease of use, as primary relevance for technology acceptance (Davis et al., 1989). The objective of TAM is to produce an explanation of the determinants of technology acceptance over a broad range of users (Davis et al., 1989). A key purpose of TAM, therefore, is to provide a basis for tracing the impact of external factors on internal beliefs, attitudes, and intentions (Davis et al., 1989). It was in the recent studies like Leong et al., 2018; Yang & Wang, 2019 that a relationship between the two constructs of TAM – perceived ease of use and perceived usefulness has not been supported unlike few of the old studies. Both of these studies observed similar results that depending on the age group and the tech – savviness of respondents the perceived ease of use may not theoretically mean perceived usefulness. To keep consistent with recent research and considering the characteristics of participants, we did not include this relationship in our proposal model. TAM posits that computer usage is determined by behavioural intention (BI) to use, which is described as an individual's cognitive plan to use an information system (Davis et al., 1989).

HYPOTHESIS DEVELOPMENT

Perceived Usefulness

Perceived usefulness is defined by Davis, 1989 as “the degree to which a person believes that using a particular system would enhance his or her job performance”. Perceived usefulness in TAM has been found to have a significant impact on perceived value toward using the technology (Kim & Forsythe, 2007; Williams et al., 2014). The Chatbot tries to make the market more interactive by helping and suggesting products relevant for you. (Gupta et al., 2015). Therefore, we assume that such function will make Chatbot seem useful and affect the user's perceived value in a positive manner.

H₁: Perceived usefulness will positively affect the user's perceived value of Chatbots.

Perceived Ease of Use

Perceived Ease of Use is defined as “the degree to which a person believes that using a particular system would be free of effort.”(Davis, 1989). Previous research (Lunney et al., 2016) indicated that perceived ease of use had a positive impact on user's perceived value towards

wearable fitness technology. Kim et al., (2017) determined that perceived ease of use was a great factor in influencing adoption of smart retail technology. Furthermore, the impact of perceived ease of use has been highlighted in TAM because of the influence a poor user interface has on rejection of IT technology (Venkatesh & Davis, 1996). Therefore, we assume that if the Chatbot is easy for users to operate, they will influence the user's perceived value towards the technology.

H₂: Perceived ease of use will have positive impact on the user's perceived value of Chatbots.

Enjoyment

Enjoyment is a characteristic motivation that influences the user process and shows the enjoyment and happiness relating to utilizing a technology. Enjoyment is seen as emphatically identified with attitude towards using a particular technology (Moon and Kim, 2001). Past researches have revealed the impact of Enjoyment towards the user's attitude (Koufaris, 2002) and therefore, the fact that whether user enjoys the use of Chatbot might have an effect on their attitude towards it. Hence, following hypothesis is proposed:

H₃: There is a positive relation between the enjoyment and user's attitude towards Chatbots of E-commerce sites.

Technicality

Technicality is defined as the degree to which an individual believes that using a particular system would be free of physical and mental effort (Davis, 1989). In TAM, effort is considered as a component of cost (Cronin et al., 1997). They also found that excessive mental cost affects perceived overall cost to the user. It has been shown that the complexity of the innovation has a significant negative relationship with the adoption of the new application (Rogers, 1995). Therefore, it can be presumed that technicality or complexity of the Chatbot will negatively affect the Chatbot's experience.

H₄: Technicality will have a negative influence on user's attitude to use towards Chatbots of E-commerce sites.

Perceived Value

Perceived value is an important concept, as it is believed to have an influence on customer behavioural intentions (Cronin et al., 1997). The definitions of perceived value generally involve a trade-off between what customers receive and what they give up to acquire the service (Zeithaml, 1988; Dodds et al., 1991). However, it is noted that non-monetary costs such as time, physical and psychic effort are also considered as the outlays to obtain the service (Lovelock, 2001). Therefore, we assume that higher perceived value leads to higher behavioural intention to use Chatbots.

H₅: Perceived value will have a positive effect on user's attitude towards Chatbots of E-commerce sites.

Perceived Risk

Bauer (1960) stated that perceived risk is "a combination of uncertainty plus seriousness of outcome involved- associated with each category of product". He said that, "Consumer behaviour involves risk in the sense that any action of a consumer will produce consequences which he cannot anticipate with anything approximating certainty, and some of which are likely to be unpleasant". There are various types of risk such as security risk, psychological risk, social risk, time risk, and performance risk. This risk may have a significant impact on an individual's decision to use chatbots. Perceived high security risk will make the user reluctant to use Chatbots and many consumers believe that they are vulnerable to identity theft while using online banking services (Littler and Melanthiou, 2006). We can indicate that perceived risk will negatively impact the consumer behaviour.

H₆: Perceived Risk negatively impacts user's attitude to use Chatbots of E-commerce sites.

RESEARCH METHOD

Attitude to Use

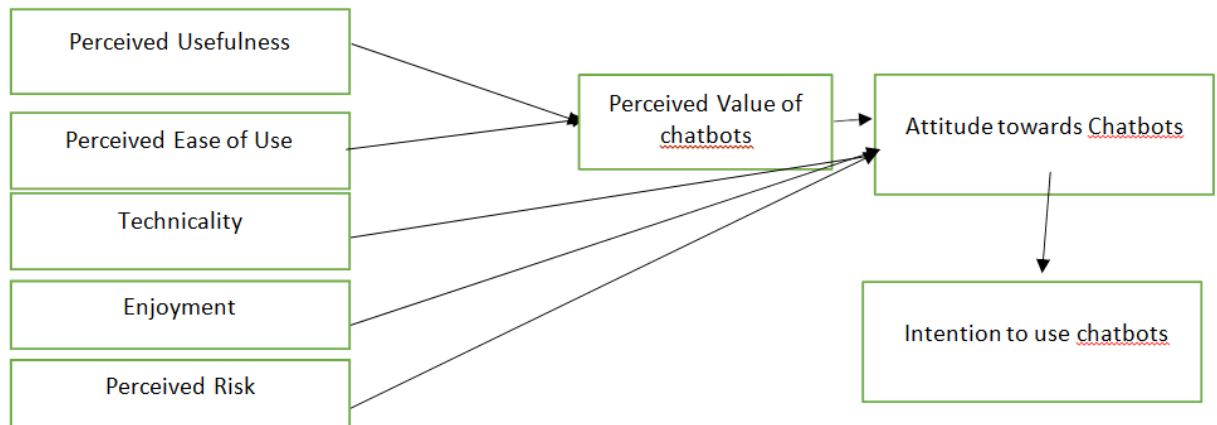
An attitude is "a summary evaluation of a psychological object captured in such attribute dimensions as good-bad, harmful-beneficial, pleasant-unpleasant, and likable- dislikeable" (Ajzen, 2001). Liu et al, (2009) in their previous studies have demonstrated that attitude is a direct determinant of Intention to use.

H₇: Attitude to Use will have a positive effect on a user's intention to use Chatbot of E-commerce sites.

Intention to Use

Intention to use is the user's readiness to use a technology. Previous studies like Zang et al, 2008 and Yi-Cheng et al, 2007 reflected that intention to use can be a determinant for the actual use of a new technology. Thus, Intention to Use can have an impact on user's actual use of the Chatbot (Figure 1).

H₈: User's intention to use will have a positive effect on their actual use of the Chatbot of E-commerce sites.



**FIGURE 1
PROPOSED MODEL**

RESEARCH METHODOLOGY

Survey research was the predominant methodology used in this study. The sampling units are online consumers shopping on various e-commerce websites. A questionnaire was developed to collect the data from the respondents. Each statement was measured on the scale of 7, with 1 as strongly disagree and 7 as strongly agree. In the last few years, a number of articles developed and validated instruments for measuring TAM constructs; therefore, all the items in the instrument were derived from existing literature. The details of the questionnaire are presented in Table 1 along with the scale being used in the study. The questionnaire was face validated through three experts in the IT industry and the suggested changes were made before administering the final questionnaire. In order to target online consumers, a Web-based survey using Google Forms was employed. The respondents were asked to provide some demographic information such as age group, gender, location (City), occupation and education level. The respondents were instructed to answer all the questions based on their view and understanding of Chatbots. The survey link was propagated with the use of social media messengers like WhatsApp and LinkedIn. The number of responses received was 237 which were found complete and passed the test for usability and reliability.

DATA ANALYSIS

The demographics of the respondents under the study. Principle component analysis with varimax rotation was applied in order to extract the factors. The results showed clear extraction of eight factors with eigenvalues greater than 1 and accounted for the total variance of 78.9% and reliability greater than .80 for each construct. The factor loadings and reliability of the constructs are presented the age group, gender, location (City), occupation and education level (Table 1).

Constructs	Mean	Standard deviation		
Perceived Ease of Use	6.7	.920		
Perceived Usefulness	5.6	.992		
Enjoyment	5.2	.989		
Technicality	5.1	.834		
Perceived Value	6.1	.982		
Perceived Risk	4.6	.931		
Attitude towards chatbot	6.3	.827		
Intention to use chatbot	5.6	.866		
Age	Less than 20 (10%)	20-30 (45%)	30-40 (40%)	More than 40 (5%)
Gender	Male (43%)		Female (57%)	
Education	Less than graduate (10%)	Graduate (25%)	Post graduate (65)	

Source: Developed by the author.

FINDINGS AND DISCUSSIONS

This study is the first step for the development of empirical research in the field of acceptance of chatbots. The factors for adoption and acceptance of chatbots are extracted using factor analysis which resulted in eight factors namely, Perceived Ease Of Use, Perceived Usefulness, Enjoyment, Technicality, Perceived Value, Perceived risk, attitude towards chatbot and intention to use chatbot. In this research, TAM is extended by involving few more constructs of enjoyment and technicality which were missing in earlier studies (Davis et al., 1989). Although TAM put forward the theoretical framework wherein perceived usefulness and ease of use decide the acceptance of a specific technology but this research extend it by involving associated risks and benefits of using chatbots and their subsequent effect on the user's attitude towards chatbots and their resulting usage intention (Huang and Chueh 2021). Although the proposed model is not empirically tested in the current paper but the extracted factors can be explored in further details. Perceived ease of use is defined as the degree to which a person believes that using a particular system would enhance his or her performance. All the respondents reported this as the important factor as they believe for accepting any technology, it is important that technology is easy to use and adopt in everyday transactions (Sanny et al., 2020). Also, Perceived Usefulness is also found as an important factor under the study. Consumers find it easy to adopt the technology when they find it will improve their daily work performance and help them to manage their work effectively.

In today's time when people are overoccupied with their engagements, they search for technology that ease their work and handle it effectively. So perceived usefulness is important for consumers while they adopt an emerging technology like chatbot (Huang and Chueh 2021). Also, while consumer adopt a technology it is important to note that technology must be worth adopting and add value to the people's life (Goot and Pilgrim, 2019). Chatbot is a kind of technology which make people enjoy its usage and excite them. Alongwith excitement, the other aspect of concern is related technicality and its implication on the attitude of consumers towards chatbots. Since it is a new technology and its adoption may take some time, and its related

technicality may have an important role in its adoption in the industry (Sanny et al., 2020). The paper also proposes that technicality is an important emerged factor which may negatively impact the attitude of consumers towards chatbots. Another aspect emerged is the perceived risk associated with chatbots that may negatively impact the individual's attitude towards its usage. Attitude is defined as a summary evaluation of a psychological object captured in such attribute dimensions as good-bad, harmful-beneficial, pleasant-unpleasant, and likable-dislikeable. Authors proposes that perceived usefulness, ease of use, perceived value and associated technicalities and perceived risk will together impact an individual's positive attitude towards the usage of chatbots and decide their subsequent usage intentions.

Contribution

This paper theoretically contributes to the conceptualisation of chatbots and relate it to the technology acceptance model. It presents the theoretical framework wherein ease of use of chatbots on ecommerce websites, their perceived usefulness leads to the perceived value which further influence the attitude of individuals towards chatbots. Also, another important parameters which were added to the technology acceptance model are enjoyment, technicality and perceived risk. Though these new dimensions are not being empirically tested in the current model but have theoretical evidences in literature wherein they influence attitude towards technology and its subsequent acceptance (Trivedi, 2019).

Additionally, This paper has some practical implications also. It gives important input to the organisations dealing in chatbots to understand the relevance it holds from the customer's perspective. They need to develop the chatbots which are user friendly, easy to use and useful in making their transactions convenient and better. The user experience is the game changer in today's competitive environment and therefore, chatbots can serve as an effective tool to enhance the user experience and address consumer's concerns at the earliest. Companies must consider the perceived risk of their chatbot products and make sure that perceived value is anyway higher than the perceived risk. This will ensure the customer's participation and their positive attitude towards the usage of chatbots. Another important aspect is enjoyment especially in case of young consumers, they aspire to use a technology which provides them sense of excitement and enjoyment (Goot and Pilgrim, 2019). Companies, while developing their chatbots can consider this as an important parameter and ensure their developments are exciting enough to draw the attention and engagement of the users.

CONCLUSION

This research is the initial step for further empirical analysis. It proposes a theoretical model which can be empirically tested in future research. The research is based on the small sample and therefore may not adequately reflect the results that can be generalised and considered validated. Future studies may increase the sample size and use advanced statistical methods to test the stated hypothesis. It would be interesting to analyse chatbots from the perspective of larger population to test the proposed theoretical model. The mediating and moderating variables can also be included to get better insights on the model. Since chatbot is a new technology, relating to the other theories such as the theory of planned behaviour can also be the focus of future research. The data is collected from consumers and not differentiated on

the basis of demographics. Therefore, future researches may focus on specific category such as young consumers which are better and active users of ecommerce websites.

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