

Acceptance of Chat bots by Millennial Consumers

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Abstract— Chat bots are Artificial Conversational Entity or a computer program based on artificial intelligence which are very interactive and does a conversation via auditory or textual method. In today’s world the marketers and local businesses are adopting this technology in the whole purchase process, from information gathering down to processing a sale, chat bots help consumers click less, chat more and shorten the distance to a transaction. The purpose of this study will be to check the behavioral intention and attitude of millennial’s towards messenger chat bots. To check whether Millennials are ready to adopt chatbots as communication interface for commerce, are they acquainted with the concept of chat bots, to what extent they find them useful, easy to use, compatible, do they find them irritating, intrusive and a possible threat to personal privacy.

Key words: Chat bots, Millennial, attitude, Conversational Commerce.

I. INTRODUCTION

Chat bots are Artificial Conversational Entity or a computer program based on artificial intelligence which are very interactive and does a conversation via auditory or textual method [1]. Chat bots offers an ideal way for getting information from the user [2]. Changing Technology has introduced us to chatbots and now they play a crucial part in our day to day life. In today’s world the marketers and local businesses are adopting this technology in the whole purchase process, from information gathering down to processing a sale, chatbots help consumers click less, chat more and shorten the distance to a transaction [3]. Today the tech-savvy millennial now look up to chatbots to give them answers on a range of topics from very basic to complex questions [4]. The questions can be as simple as “How is the weather today?” to “What features does my smart phone have?”. The inherent natural language processing ability of the chatbots coupled with their interactive way to provide answers, everything makes it a great tool. [5]. Though chat bots are trending and have very effective practical use but at the same time there can be some devious chat bots, any one in this cyber world can be their prey [6].

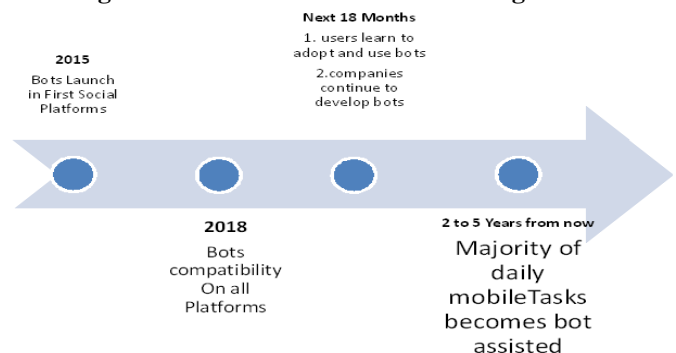
II. RELATED WORK

The following sections provide a review of related work relating to millennial acceptance of chat bots. Growing advancements in mobile commerce (m-commerce) has led to the development of chat bots. M-commerce can be defined as “...any transaction with a monetary value - either direct or indirect - that is conducted over a wireless telecommunication network” [7]. The model for user acceptance and usage which is mostly used in previous researches related to technology in various domains is the Technology Adoption Model (TAM) [8]. This model has been extended in many ways by various researchers [9]. Based on the reviewed literature and similar reasoning as [10] various models of technology acceptance PEOU, PU, C and BI are considered by various researchers for prediction of mobile messenger Chatbot acceptance. Chat bots have the capability to change the way we communicate in this digital world, according to Newman (2016) [11] “the ultimate goal of chatbots is to replace the most common interfaces we use on computers and in connected devices” chat bots has potential to carry on fundamental tasks and has become a handy tool (Hollister, 2016) [12]. Review of Literature tells us that Concepts of Chatbots came only after 2014; still it is evolving (Fig 2).

Fig 1: The use cases of chat Bots

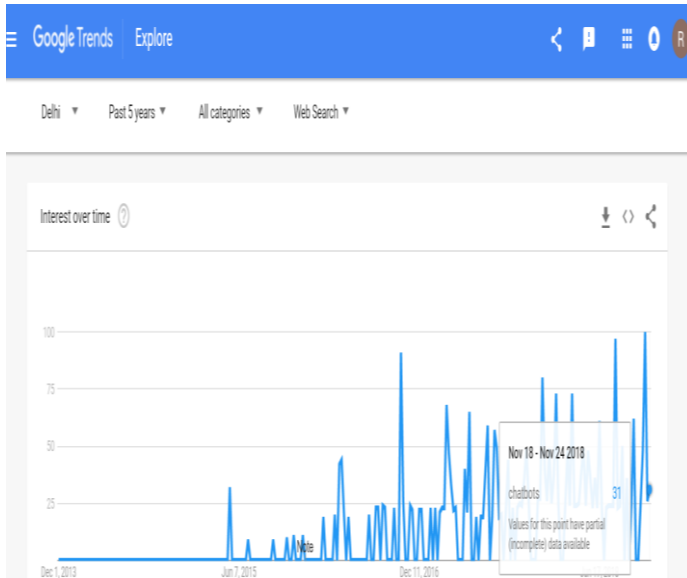


#Fig 2: Evolution of Chat Bots is Moving Forward



Looking on to the Google trends , of last five years on Chat bots we came up with the following graph showing interest over time (Fig 3) ,which clearly shows the increase in the number of chat bot users. After reviewing near about 70 papers, 40 papers laid emphasis on chatbot users and future scope , other papers were more on chatbots development.

#Fig 3: Interest Over time



Source:

<https://trends.google.com/trends/explore?geo=IN&q=CHATBOT>

On the basis of Literature reviewed, papers were analyzed using 'R software' for identifying most frequently used keywords by authors in order to check the direction of our research.

#Fig 4: The word-cloud evidences the predominance of study.



III. PROPOSED WORK

Objective of the proposed research work:

- To find whether Millennial are acquainted with the concept of chat bots
- To identify key factors driving millennial towards chat bots usage.
- To check whether Millennial are ready to adopt chat bots as communication interface for commerce in future
- To what extent they find them useful, easy to use or do they find a possible threat to personal privacy

Methods used:

- In this research the author is investigating the factors regarding Chatbot's adoption by millennial in Delhi region
- The study is exploratory in nature.
- Participants Inclusion criteria for the study were male and female in Delhi of the age 18 to 35 years, with education level elementary , graduation , post graduation and diploma
- In the main study, the questionnaire comprised of 19 statements based on 5 point Likert scale were distributed to 170 participants through Google forms, out of which 161 were received back. Out of these 161 respondents, 16 were not aware of chat bots and so analysis was done on 143 respondents.
- Reliability and validity were calculated by the Cronbach's alpha and face validity respectively. Factor Analysis, using IBM SPSS Statistics 21 programme, was implemented to calculate the results.

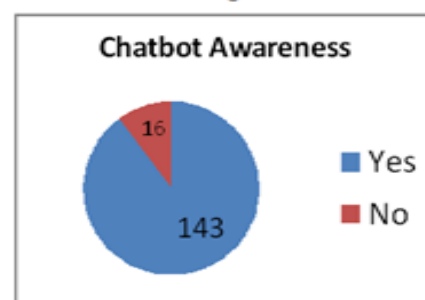
IV. RESULTS & DISCUSSION

Descriptive Statistics: Descriptive statistics summarizes the characteristics of the respondents which help the researcher to understand the nature of the sample surveyed. Following table summarizes demographic profile of the respondents.

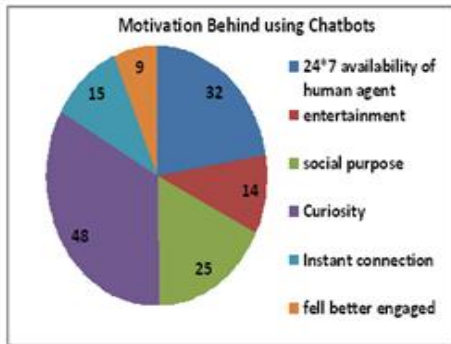
#Table 1: Demographic Profile of the Survey Respondents

Sample characteristics		Frequency
Age	18 to 25 years	81
	25 to 30 years	52
	30 to 35 years	10
Gender	Male	101
	Female	42
Educational Level	Elementary School	8
	Graduate	71
	Post graduate	52
	Diploma	12

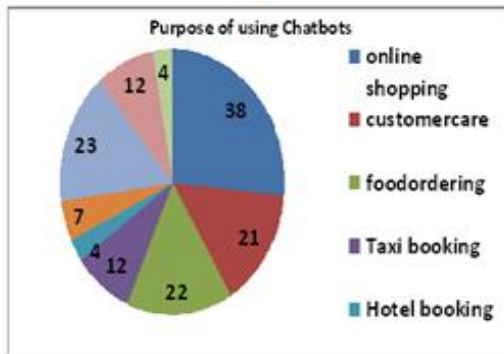
#Fig 4



#Fig 5



#Fig 6



- Reliability Score through Cronbach's alpha was found to be .906, which is quite higher than the standard value of 0.7.
- Factor Analysis was performed to analyze interdependent correlations among a large number of items which helped to identify common underlying dimensions. For extracting factors, method of Principal component analysis was used.
- The Kaiser Meyer Olkin measure verified the sampling adequacy for which the value found was 0.709, which is above the acceptable limit of 0.5 (Field 2009). Bartlett's test of sphericity, chi-square value of 564.366 at p value 0.000 indicates that it is suitable to apply Factor analysis

#Table 3:KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.709
Bartlett's Test of Sphericity	Approx. Chi-Square	564.366
	Df	171
	Sig.	.000

Factor analysis was conducted to obtain Eigen values for each item in the data. Four factors had eigen values higher than Kaiser's criterion of 1 and, in combination, explained 67.33% of the variance. Table 4 shows factor loadings after varimax rotation, eigen values, and the percentage of variance accounted for by the seven factors. The items that clustered on the factors suggested that factor 1 represented perceived utility of the respondents, factor 2 represented the behaviour,

factor 3 represented the attitude of the respondents towards chat bots usage, factor 4 represented the concern of the respondents towards Internet privacy.

#Table 2:Reliability Statistics

Cronbach's Alpha	No. of Items
.806	19

#Table 4: Summary of factors extracted

Factor Name	Eigen	% of variance	Statements	Factor Loadings
Perceived Utility	7.589	39.944	I believe my interest in chatbots will increase in the future	0.567
			Using chatbots fits my lifestyle	0.626
			Chatbots makes online shopping more interesting	0.715
			I think using chatbots would make it easier for me to shop for products	0.761
			I think using chatbots would make it easier for me to follow up on my orders	0.597
			I think using mobile chatbots enables me to shop for products online more quickly	0.785
Behaviour	2.390	12.577	I recommend others to use chatbots	0.854
			I would like to do commerce activities with chatbots.	0.730
			I intent to use chatbots in the near future	0.852
			I think I need to click less, chat more, gives me a personal touch	0.524
Attitude	1.615	8.501	I find chatbots very useful in shopping for productS/services	0.558
			I think learning to use a mobile chatbots is easy	0.720
			Using a chat bots fits the way I like to shop or seek for product information online	0.534
			Chatbots are also being looked to for transaction-side assistance	0.687
			I think it is easy to engage with bots instead of using other customer service	0.703
Internet privacy concern	1.199	6.308	I am concerned that the information I submit via chatbots could be misused.	0.718
			I am concerned about submitting information via messenger chatbots, because of what others might do with it.	0.832
			I am concerned about submitting information via messenger chatbots, because it could be used in a way I did not foresee	0.729
			I think using chatbots enables me to shop for products online more effectively	0.565

V. ANALYSIS

Result conclude that 86.5% of millennials are using chat bots as they find them interactive, easy to use and are ready for its adoption in future world of artificial intelligence but they are not very much aware of the threat ,security issues yet. There were four factors extracted named as perceived utility,

behavior, attitude, internet privacy concern. The important factor is Perceived utility The degree to which a person believes that using a messenger chatbot would enhance his or her performance (modified) Davis (1989), In this paper only factors related to chat bots usage are extracted but there still lies further need to bring out the relationships among different factors. Also as the sample size was small as compared to the size of population in Delhi , a scope is to elaborate the survey and bring out better results, and as well as study could be elaborated on baby boomers also.

VI. CONCLUSIONS

This research shows that early adopting mobile consumers, millennials in particular, are starting to use chat bots for transactions that used to be done via app, text or calls. It is the beginning of the next wave of digital commerce. The study identifies key motivational factors driving chat bots use. Millennials are finding chat bots very usable but at the same time they are equally concerned about the security and privacy concerns. Looking into the interest and capabilities of this technology, there is capacity for chat bots to find a place in everyday usage.

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