
HR Recruitment Through Chatbot- An Innovative Approach

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Abstract: Artificial Intelligence is used in all the sectors, among which chatbot is a new trend. Chatbots are used in many sectors, where HR chatbot have taken over the HR industry This research paper titled HR Recruitment through chatbot helps to know about how chatbot is useful in recruitment for HR managers and to know whether these chatbots will replace hiring managers in the upcoming years or not. A descriptive research is used in the study for a sample size of 113. The tools used in the study are mean analysis, frequency analysis, Independent sample T test and ANOVA. It is found that factors influencing the study are need for chatbot, technical issue, evaluation and installation. From the study it's been inferred that chatbot can help the HR manager in saving their time by selecting the qualified and helping the HR manager by bringing the recruitment to further process but it can't replace a HR manager.

Keywords: Chatbot, HR manager, Recruitment, Technology, Innovation

INTRODUCTION

A Chatbot is an artificial intelligence (AI) programming software that simulates discussions, chats or conversations with human, user, employees or clients in a natural language through messaging applications, websites or by phone. These chatbots are also known as digital assistants. Chatbot helps in interpreting the user's requests by processing it and by providing relevant answers. They are mostly used to handle simple tasks in both business-to-consumer (B2C) and business-to-business (B2B) environments. It not only saves time but also helps in providing a very good customer service when the live agents are not available. The most important thing in implementing a chatbot is selecting the right natural language processing (NLP). For example, if the user interacts with a chatbot through voice, then the chatbot requires a speech recognition engine. Chatbots are useful in many ways by providing improved customer service, maintaining customer engagement, monitoring consumer data, providing 24hours availability, providing instant answers, instant transactions, increasing sales, reaching new customers and many more. Chatbots are used in many sectors, where HR chatbot have taken over the HR industry. HR chatbot helps in reducing the recruitment costs and time, reduce the staff turnover, enhance employee engagement, improving onboard experience, boost productivity, providing personalized experiences and many more. It is predicted that the future HR industry will be dominated by the HR chatbots. Chatbots are becoming common in many businesses. Different types of chatbots are used by different industries which deal with simple requests to advanced queries. They are used in many sectors such as retail, e-commerce, travel, hospitality, banking, education, etc. Recruitment chatbot is also called as conversational agent, it uses AI technology such as natural language processing to understand a user's messages. These chatbots are used to communicate and interact with applicant's queries by asking questions and helps in speeding up the screening process. It also helps in taking up the recruitment to the further process by scheduling an interview with a recruiter. The major use of the HR chatbots is, it can engage with an unlimited number of applicants in real-time simultaneously and can provide relevant answers instantly. A recruitment chatbot is like a HR manager's assistant which, with the help of artificial intelligence and machine learning does some basic process. It lets a recruiter know how many interviews they have for a day and helps in scheduling and setting up interviews with candidates. It collects the candidate's basic information, like education qualification or past experience, and asks them the screening questions, after which it collects all the information and feeds it directly into the business's internal database. These HR chatbots act as an actual human recruiter by talking to one candidate through email, another through SMS and another through social media simultaneously. The main objective is to make a research to know about hiring through chatbot and also to know whether a chatbot will replace a hiring manager or not. This article also tried to compare the views of the respondents to know the drawbacks of the chatbots.

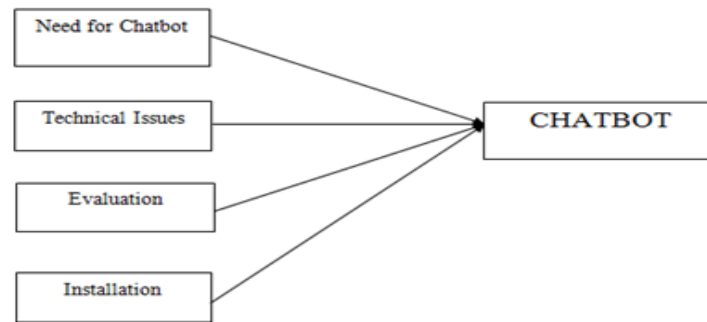


Fig.1: Conceptual Model of the study

REVIEW OF LITERATURE

(Garimella and Paruchuri, 2015) Finding the right qualified candidate for a job is always a hard task for the HR managers. A virtual intelligent agent, a chatbot is installed in the organizations to make intelligent conversations with one or more human or virtual agents. These chatbots are built to fulfill the needs of humans by answering or responding to basic queries for 24/7. These chatbots have a proper knowledge base to connect the world and it’s been used in several domains such as E-commerce, automated auctions, customer service, e-learning, and network security. (Joshi, 2018) The performance of AI is excellent when it is aligned with the HR processes particularly in recruitment function and HR Chatbots are the live examples for this. ChatBots are nothing but tiny dialogue boxes which act like humans and communicate to the candidates through text and voice. (Papageorgiou, 2018) From the beginning, humans were competing for innovation and improvement. The innovation in the HR sector did not arise and was slow until the Industrial revolution. Innovation evolves in places where it is least expected. (Michailidis, 2018) Artificial intelligence (AI) and other technological innovations are affecting all aspects of our societies, they are even causing changes in human resource (HR) practices in business and non-profit organizations. These high tech advances affect the employment patterns and the way of companies hiring the employees, the business workforce, HR practices and the way of HR managing their employees. (“Owasi 2018,” n.d.) Artificial intelligence provide advanced AI solutions for hiring managers, it provides basic recruiting tools and many intermediate applications, these tools creates more effective way for HR to predict a candidate’s future success towards their organization. Artificial intelligence (AI) is transforming the Human Resource Now-a-days. One such tool is chatbots, it interacts with the applicants in order to verify whether they meet the job requirements are not.

(Reilly, 2018) AI has a big impact on transactional work which is repetitive, rule-based and where high accuracy is demanded. The robotic process automation (RPA) can speed up activities, reduce costs and be error free. In the more-advanced organizations, there is no HR intervention because managers and employees are trusted to make decisions or update records. In some other organizations, HR teams still try to control the data updates.(Verma and Bandi, 2019) Due to many changes happening in the IT industries, Artificial Intelligence places a major role in Human Resource. Many companies are using artificial intelligence in order to improve their efficiency of human resources. This process starts from recruitment till performance appraisal of employees. The chatbots help in screening and sending automated messages. Apart from this, it is observed that these AI performs better than the HR team by reducing the attrition rate, these AI can easily carry out simple activities of HR. (Carțiș and Suci, 2020) Nowadays there is an increased interest in solving the problem of recruiting new person in a constantly changing environment, but this process takes lots and lots of time to the HR managers, while reducing the time invested into the process, there was a search for finding solutions for it. At last it ended up in a solution called an intelligent chatbot which drives the screening interview.

(Adamopoulou and Moussiades, 2020) chatbots are developing quickly in numerous fields, including Marketing, sales, systems. This article examines the development of chatbots and design of chatbots. Artificial Intelligence (AI) plays a major role in our day by day lives. A chatbot is a framework, which reacts like a brilliant element when chatted through content or voice. It uses Natural Language Processing. (Skjuve et al., 2019) have contributed partial implications for the design of human chatbot interaction and to explore the theory of uncanny valley using the domain of chatbots. (Nawaz and Gomes, 2020) have studies that organizations are aiming to adopt automation across the functional areas, this will minimize the time and effort of human resources. Chatbots are very productive tools in recruitment and it helps in preparing recruitment strategy in industries. The Artificial Intelligent (AI) Chatbots are developed to make messages and to provide assistants to the consumers for 24/7 to answer all queries. These Chatbots handle all the raised complex problems. (Mohan, 2019) The HR ChatBots are defining the role of HR in an organization, by solving the core challenges of people, by improving efficiency, and by optimizing manual processes. A chatbot is a software program which is used by the organizations to automate conversations with humans to answer their queries based on the list of rules and algorithms and these chatbots use Artificial

Intelligence and Natural Language Processing (NLP) to mimic the conversation with people. (“Suruchi et al., (2019),” n.d.) HR is facing many challenges and problems to solve all the queries of the employees. It needs some help to make this problem get solved, ChatBots are very useful in solving these problems. Additionally United health group is on building an information base which utilizes AI to recognize upgrades in effectiveness and nature of administrations. These chatbots mainly help in candidate sourcing and candidate screening.

(Stephens et al., 2019) behavioral intervention technologies (BITs) are unique ways which incorporate the benefits of technology and psychology to address differing health needs. A behavioral coaching chatbot, addresses different facts of behavioral health, such as depression and anxiety. These chatbots are available for 24/7, and deliver customized integrative support such as psycho education, and interventions through brief conversations through existing communication channels such as SMS, text messaging and facebook messenger. (“Ajaykumar et l., 2020,” n.d.) Chatbots is a program which interacts with humans in utilizing Artificial Intelligence (AI). Chatbots are becoming smarter, more responsive and more useful. Chatbot uses Natural Language Processing (NLP). The chatbot is built using Artificial Intelligence Mark-Up Language (AIML) and Latent Semantic Analysis (LSA) and the data is collected from the database of the company.(Tadvi et al., 2020) Computer science is having a lot of advancements in the past years and artificial intelligence definitely stands different among them. A chatbot is a type of application which is capable of interacting with the user in such a way that they don't even feel that they are chatting with a machine. The Chabot allows users to feel confident and comfortable during chat due to the natural language used in messages. Our research idea is based on the rich knowledge acquired by our peer teams across the university.(A.C.Gomathi, S.R.Xavier Rajarathinam, A.Mohammed Sadiqc, Rajeshkumar, 2020; Danda et al., 2009; Danda and Ravi, 2011; Dua et al., 2019; Ezhilarasan et al., 2019; Krishnan and Chary, 2015; Manivannan, I., Ranganathan, S., Gopalakannan, S. et al., 2018; Narayanan et al., 2012, 2009; Neelakantan et al., 2013, 2011; Neelakantan and Sharma, 2015; Panchal et al., 2019; Prasanna et al., 2011; Priya S et al., 2009; Rajeshkumar et al., 2019; Ramadurai et al., 2019; Ramakrishnan et al., 2019; Ramesh et al., 2016; Venugopalan et al., 2014)

RESEARCH METHODOLOGY

In this article, descriptive research design was made by using questionnaires to learn about the perception of the respondents. The questionnaire was framed from many proven instruments developed by various researchers. Likert type questionnaire with demographic profile and statements regarding, need of the chatbot, technical issues of the chatbot, the evaluation of the chatbot and installation of the chatbot is prepared.The population targeted to collect data for this research were employees and managers working from different organizations who have the knowledge about artificial intelligence, HR recruitment and chatbot. Among which the questionnaire is circulated to the sample size of about 113 people. The collected data was analyzed using frequency analysis, mean analysis, T- test and ANOVA.

The sample profile of the study is represented through the following pie charts.

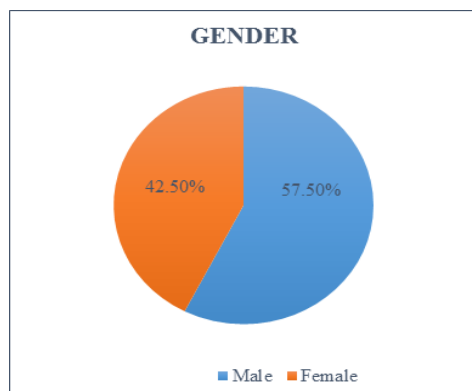


Fig.1: From the analysis it is clear that majority of the respondents are Male (57.5%) and female respondents are less in number (42.5 %).

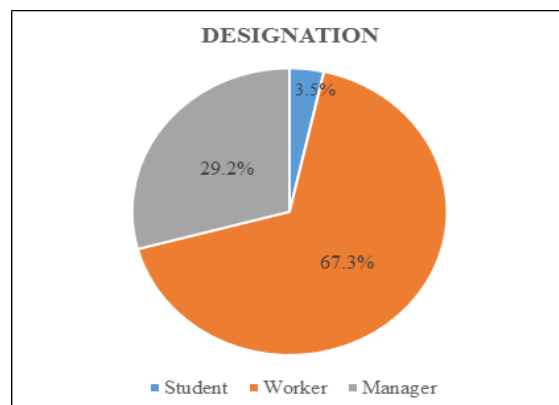


Fig.2: Majority of respondents are workers 67.3% followed by managers 29.2% and freshers 3.5%

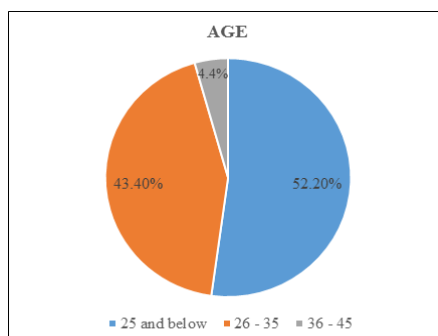


Fig.3: Among them majority of the respondents are those whose age is 25 and below (52.2 %) followed by the age which lies between 26 - 35 (43.4 %), and 36 – 45 (4.4 %).

Table 1: Mean Analysis

| NEED FOR CHATBOT | MEAN | RANK |
|--|-------------|-------------|
| I think Chatbot is essentially needed for a company (Essential Need) | 3.65 | 3 |
| Chatbot can replace a hiring manager (Replace) | 2.39 | 4 |
| Chatbot is just a robot which filters the candidates but never replaces HR manager (Robot) | 4.31 | 1 |
| Chatbot is needed to save time, but for none other purpose (Save Time) | 4.06 | 2 |
| TECHNICAL ISSUES | MEAN | RANK |
| Chatbot understands all the inputs of the user (Understands) | 2.34 | 3 |
| Chatbot even rejects a qualified candidate during the time of hiring (Qualified Candidate) | 4.12 | 2 |
| Chatbot does research and answers for a non- programmed question (Research) | 2.14 | 5 |
| Chatbot understands all the texting styles of user like slang, emojis (Texting Styles) | 2.28 | 4 |
| I think there is lack of humanness in chatbot and it doesn't understand the feelings of the user (Lack of humanness) | 4.30 | 1 |
| EVALUATION | Mean | RANK |
| Chatbot maintains a relationship with candidates as like HR do (Relationship) | 2.41 | 6 |
| Chatbot evaluates communication skills (Communication skills) | 2.71 | 3 |
| Chatbot makes decisions like a HR manager (Decision) | 2.64 | 4 |
| Chatbot evaluates candidate's emotion (Emotion) | 1.84 | 7 |
| Chatbots evaluates and recruits candidates like HR (Evaluation) | 2.62 | 5 |
| Chatbot checks how knowledgeable a candidate is (Knowledge) | 2.82 | 2 |
| Fraudulent may occur at the time of recruitment through Chatbot (Fraudulent) | 4.27 | 1 |
| INSTALLATION | Mean | RANK |
| It is more expensive to install a chatbot (Expensive) | 4.17 | 1 |
| Installing Chatbot in a small business makes a loss (Loss) | 4.04 | 3 |
| Installing a Chatbot makes an organization to recruit programmers, who could program and automate these chatbots (Recruit) | 3.95 | 4 |
| Installing Chatbot saves time (Save Time) | 4.11 | 2 |

From the mean analysis it is inferred that there is lack of humanness in chatbot and it doesn't understand the feelings of the user, sometimes fraudulent may occur at the time of recruitment through chatbot and it's also inferred that chatbot is more expensive to install. From the mean analysis of highest rank (4.31) it is inferred that chatbot is just a robot which filters candidates but never replaces the HR manager.

Table 2: Independent Sample T - Test

| GENDER | T – VALUE | SIG VALUE |
|------------------|------------------|------------------|
| Need for chatbot | 0.518 | 0.606 |
| Technical Issues | 1.776 | 0.079 |
| Evaluation | 0.567 | 0.572 |
| Installation | 0.410 | 0.683 |

The above table shows the independent T - Test analysis of gender need, technical issues, evaluation and installation of chatbot. There should be less than 0.05 for accepting the alternative hypothesis. The factors namely need, technical issues, evaluation and installation has significance value of 0.606, 0.079, 0.572, 0.683 respectively which are greater than 0.05. Hence there is no significant difference between male and female with respect to need, technical issues, evaluation and installation of chatbot

Table 3: ANOVA

| DESIGNATION | F - VALUE | SIG VALUE |
|--------------------|------------------|------------------|
| Need | 0.353 | 0.703 |
| Technical Issues | 0.553 | 0.577 |
| Evaluation | 1.795 | 0.171 |
| Installation | 5.118 | 0.007** |
| AGE | F- VALUE | SIG VALUE |
| Need | 0.318 | 0.728 |
| Technical Issues | 0.680 | 0.509 |
| Evaluation | 1.369 | 0.259 |
| Installation | 2.321 | 0.103 |

There should be less than 0.05 for accepting the alternative hypothesis. In this ANOVA analysis of designation versus need, technical issues, evaluation and installation of chatbot, the factor installation alone is less than 0.05 that is 0.007, so there is significant difference among designation with respect to installation of chatbot, other than installation, all the other factors are greater than 0.05 Hence there is no significant difference among designation with respect to need, technical issues, evaluation of chatbot. In the ANOVA analysis of age versus need, technical issues, evaluation and installation of chatbot, all the factors have significance value which is greater than 0.05 that is 0.728, 0.509, 0.259 and 0.103. Hence there is no significant difference among age with respect to need, technical issues, evaluation and installation of chatbot.

RESULT AND DISCUSSIONS

From the above research, the main thing that was found is that chatbot has many uses, it saves lots of time for the busy HR recruiters. But some fraudulence may also occur due to wrong information or wrong resume of the candidates and since it does not do face to face recruitment, it is suggested that chatbot can be used as an assistance for the HR manager which eliminates the non-qualified individuals who have no eligible education and experience and send the rest of the qualified candidates to the HR managers for further recruitment process. Proper programming language should be installed for the chatbot to understand more emotions and feelings of the human so that individuals won't find any difficulties to chat with chatbots. Chatbot answers only to the question which are programmed in it, if the user asks the question which are not programmed, it sends the same text as 'sorry, unavailable' or replies with irrelevant answer, so it is suggested that if the chatbot has more researching skills then, it will be useful to reply with the relevant answer for all the queries and questions of the user.

CONCLUSION

This research article was done to investigate whether the next new hiring manager is chatbot or not. Most of the Indian and foreign countries have been using chatbot as the major substitute for HR managers. But this research is to know whether these chatbots would totally replace the HR managers in the upcoming future or not. From all the findings, responses, websites and journals it is inferred that chatbots replies only what is programmed in it and it can't replace a HR manager since it has no feelings, emotions and due to its lack of humanness. But in the upcoming years if a chatbot is programmed to understand the human feelings and emotions and to answer all the questions of the individuals and does research and answers all the non-programmed questions, then there are chances where a chatbot can replace a HR manager. The present working chatbots definitely can't replace the HR manager due to lack of programming, research, emotions and decision making skills. Though chatbot is more expensive, it is more useful for large companies in saving lots and lots of time of HR managers, in recruiting and selecting the qualified individuals from the pool of applicants and allowing them for the selection and recruitment process to the HR manager. Since chatbot helps the HR manager by selecting only the qualified candidate, filtering them and allowing them to the next process to the HR managers, it makes the process much more easy and simple for the HR manager that they can recruit only from the qualified candidates. From this research and from observation it is been concluded that, though many companies use chatbots for recruitment, these chatbots helps just in filtering the candidates and helping them in answering for some basic queries and has not replaced HR managers due to its limitation, but if it has more programming, decision making, research skills there are changes where these chatbots replace the HR managers in the upcoming years.

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