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A STUDY ON AI CHATBOT - BOON OR BANE

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Abstract:

In 1966, Joseph Weizenbaum, an MIT professor, is recognized for creating the initial AI chatbot. Artificial Intelligence is used in our day-to-day life. It reduces the time as well as heavy data collection and its consistent results makes the best inventions in 21st century. AI is a boon or bane depends on how human choose to use it. AI is powerful tool for solving problems and creating a better future. But if we misuse it, it could lead us to disastrous consequences. Natural Language Processing (NLP) and Machine Learning are important components in the field of chatbot technology. This system swiftly delivers a relevant response upon receiving a user's question by processing the input, understanding the user's query, and utilizing sophisticated algorithms. The primary goal of AI chatbot is to enable businesses to engage with customers on a personal level, eliminating the need for human representatives and reducing costs. This study analysis if AI Chatbot is a boon or bane to the human society. AI chatbots can boost productivity and enhance workplace satisfaction by facilitating learning of technical skills. However, they may also replace certain job roles as they become more advanced, emphasizing the need for individuals to develop complementary skills and adapt to the changing technological landscape. Every factor has its own positive and negative sides. AI lies in its own ability to augment human creativity. Generative AI could be a boon for all it's users. It can be both harmful and helpful, depending on its applications.

Keywords: *Artificial Intelligence, Natural Language Processing (NLP), Machine Learning, sophisticated Algorithms.*

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Introduction:

An AI chatbot is a computer program created using Artificial Intelligence (AI) software, serving as a conversational agent. Widely applicable in various sectors, including industry, business, and daily activities like food ordering and goods delivery, the concept of chatbots originated with MIT professor Joseph Weizenbaum, who developed the first chatbot in 1966. The primary function of AI chatbots is to offer precise answers to user queries through interactive conversations. Leveraging Natural Language Processing (NLP), chatbots respond intelligently to text or voice messages.

Described as "computer programs designed to simulate conversation with human users," chatbots go by various names such as interactive agents, digital assistants, smart bots, or artificial conversation entities. They have gained popularity due to their numerous advantages for both users and developers. AI's overarching goal is to comprehend human behavior and enhance performance. Notably, AI reduces errors, increases accuracy, and operates continuously, providing 24/7 availability.

Research Methodology:

Research Question:

We aimed to explore and evaluate the advantages and disadvantages of AI chatbots in our daily lives. The increasing integration of AI chatbots raised questions about their overall impact on

society, focusing on their role in communication,

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efficiency, and potential ethical concerns. The goal was to comprehensively understand whether AI chatbots are a boon or a bane in contemporary society.

Objectives of the Study:

- To create awareness of the AI Chatbot among people.
- To study the effectiveness of AI Chatbot in today's generation.
- To understand the working of AI Chatbot in various sectors and organisations.

Hypothesis:

Null Hypothesis (H0):

"There is no significant difference in productivity between individuals who use AI chatbots in task-oriented activities and those who do not."

Alternative Hypothesis (H1):

"There is a significant difference in productivity between individuals who use AI chatbots in task-oriented activities and those who do not."

Significance of the Study: This study will help us to know that how each and every person can become a part of the AI. In future, AI chatbot will become very encouraging, poised to revolutionize various industries through advanced natural language processing, personalized user experiences, and seamless integration of multi-modal interactions. Additionally, they will seamlessly integrate from user interactions, and prioritize ethical considerations such as bias and privacy. Collaborating with humans to enhance productivity, AI chatbots are expected to witness global adoption across sectors like customer service, education, healthcare, and business operations, ultimately driving significant advancements and improvements in user experiences worldwide.

Methodology: In this study, we employed a quantitative approach. Data of a quantitative nature was gathered through an online survey to gather various opinions and experiences regarding AI chatbots. Primary data was collected through a questionnaire of about 20 questions (19 close-ended and 1-open questions). Data was collected from 105 respondents for the study.

Type of research: Descriptive Research

Conclusions are drawn based on observation without conducting an experiment, researchers rely on observing natural behaviors and patterns without manipulating variables intentionally.

This method, known as descriptive research, involves observing subjects in their natural environment without interference. It allows researchers to gather insights and draw conclusions based on what they observe without the need for a formal experiment.

Sampling Method: Random sampling Method

Data was collected from the respondents on random basis. The respondents were of different age groups having knowledge of chatbot.

Limitations of the Study:

1. The study is particularly focussing on chatbot with a view to answering to the questions and getting relevant data as required. It ignores other factors of chatbot.
2. Data has been collected from only 105 respondents which restricts and limits the quantum of data.
3. Also, the study has been done in Mumbai city which limits the area. Other areas could have been explored as Chatbot is used worldwide.

Review of Literature:

- **Author- Geoffrey Crisp (2007, 2009),** Second Life offers an interactive online platform where students can create avatars to engage with virtual environments resembling online games. Avatars can interact with programmed virtual objects, responding intelligently to keywords. While currently requiring programming skills, the authors have developed simple objects in Second Life for teachers to create interactive learning or assessment activities without extensive programming experience. These objects prompt avatars with

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questions based on their approach, leading to menu selections and presenting further options. The avatars' responses can be archived for assessment. This early-stage project shows promise in enabling teachers to easily construct assessment scenarios in virtual worlds, paving the way for more complex and productive learning experiences.

- **Author- Aishwarya Gupta, Anupama Vijayakumar, Divya Hathwar (2020)**, The modern technological era has significantly impacted society, particularly with the emergence of powerful virtual assistants like chatbots in conversational services. These software programs utilize natural language understanding and processing, extending beyond task-oriented functions like booking tickets or locating restaurants. This paper offers an overview of chatbots, discussing their types and proposing a classification based on market trends, usability, and specific requirements.
- **Author- Arum Park, Sae Bom Lee, Jaemin Song (2020),** This study explores the business value generated by chatbot technology across various industries. In businesses, chatbots enhance productivity by addressing internal queries or customer concerns. In education, AI technology substitutes instructors in responding to students, reducing their workload. Commerce benefits from offline stores using chatbots to offer innovative purchasing experiences through AI speakers and personalized services. Chatbots provide convenience but may compromise communication depth by offering primarily objective responses, reducing subjective perspectives. This study compares and discusses the characteristics, advantages, and disadvantages of chatbot services.

Data Analysis & Interpretation:

Descriptives

	zeffectivelevel	*Level of Effectiveness in obtaining accurate answers*
N	*104*	*104*
Mean	*-3.16e−16*	*3.69*
Standard deviation	*1.00*	*0.698*

In the case of one tail z test of mean, we compare the z value of mean with the table value of 1.645. If the z value is greater than the table value, the null hypothesis is rejected and if the z value is less than the table value, the null hypothesis is accepted.

In the above hypothesis, z value of mean is calculated as -3.16e−16 which is converted in absolute value as -7.41022942207. This value is lesser than the table value of 1.645 ($z < 1.645$), hence, alternative hypothesis is accepted. Therefore, Null Hypothesis "There is no significant difference in productivity between individuals who use AI chatbots in task-oriented activities and those who do not." is rejected.

Alternative Hypothesis (H1): "There is a significant difference in productivity between individuals who use AI chatbots in task-oriented activities and those who do not." is accepted.

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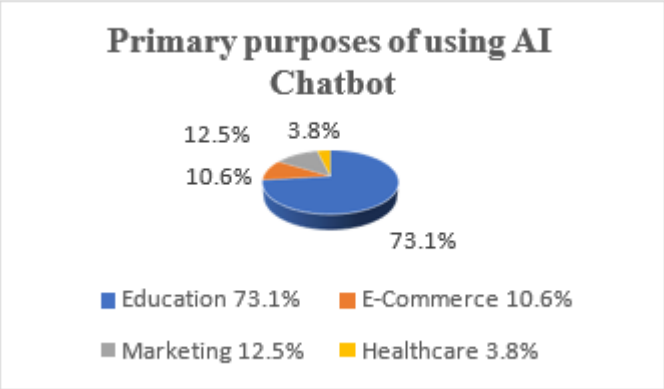
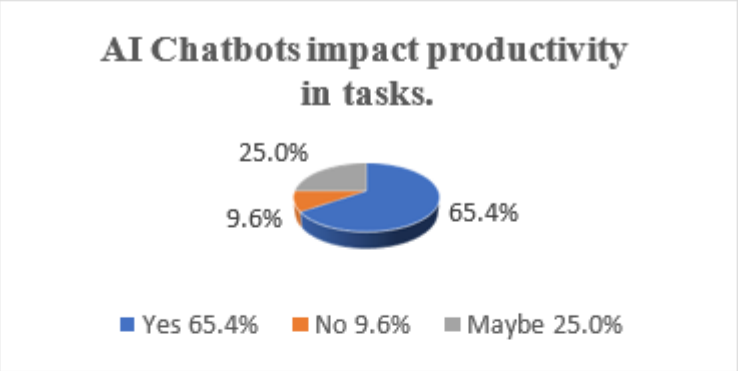
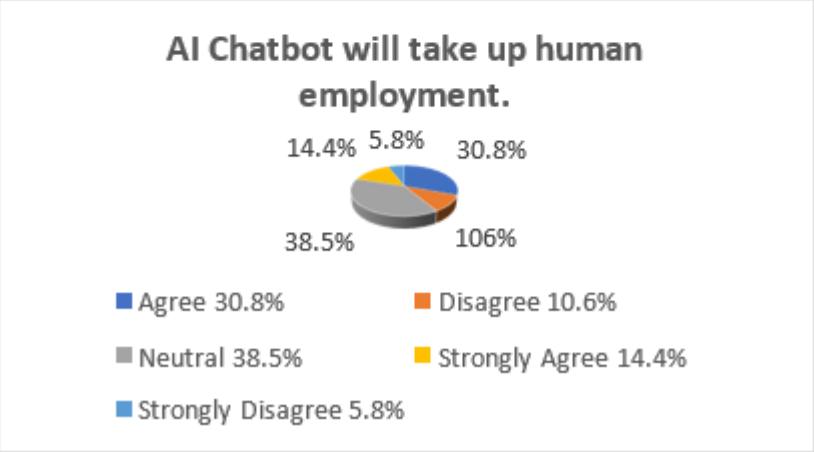
Data Analysis:







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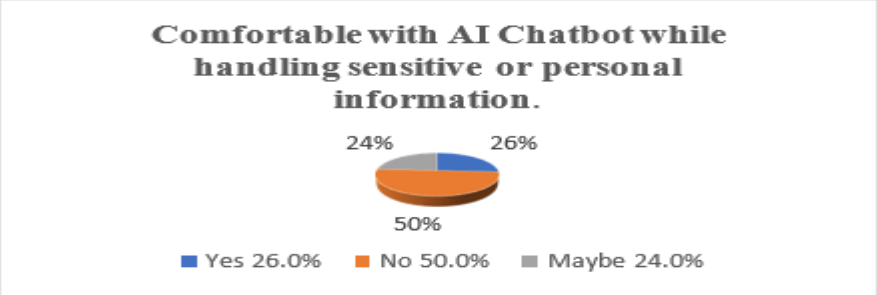

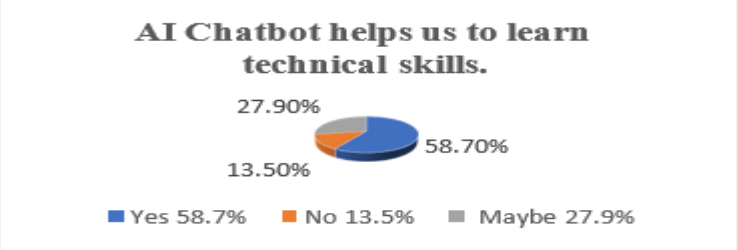

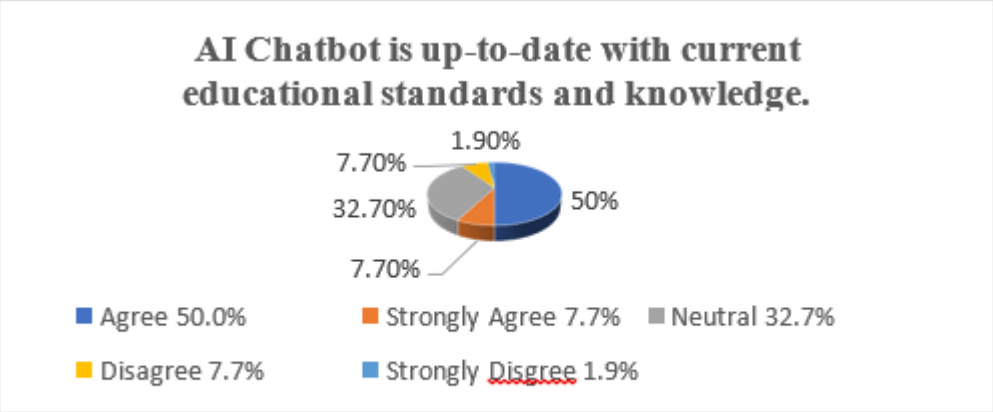

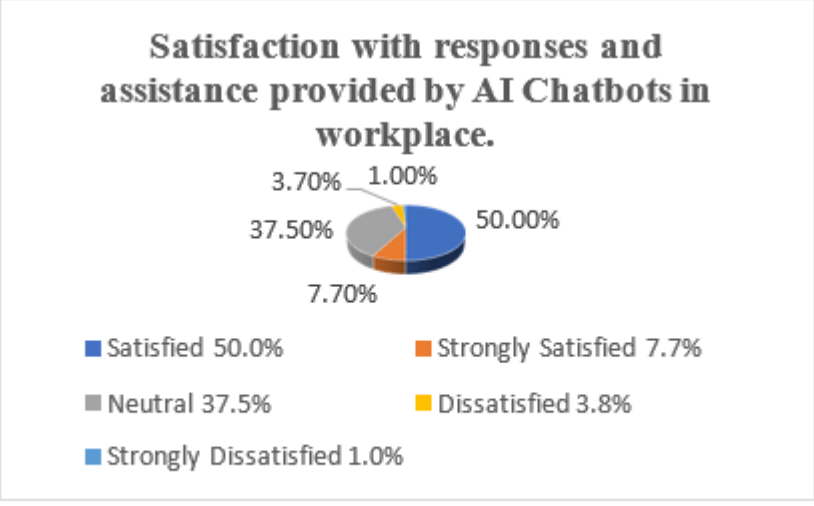

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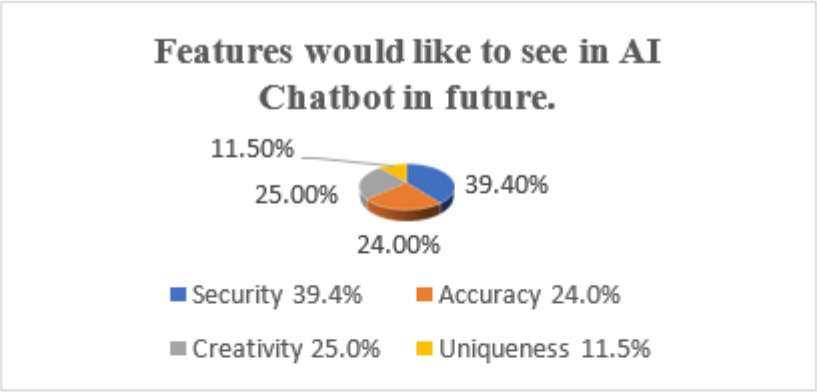

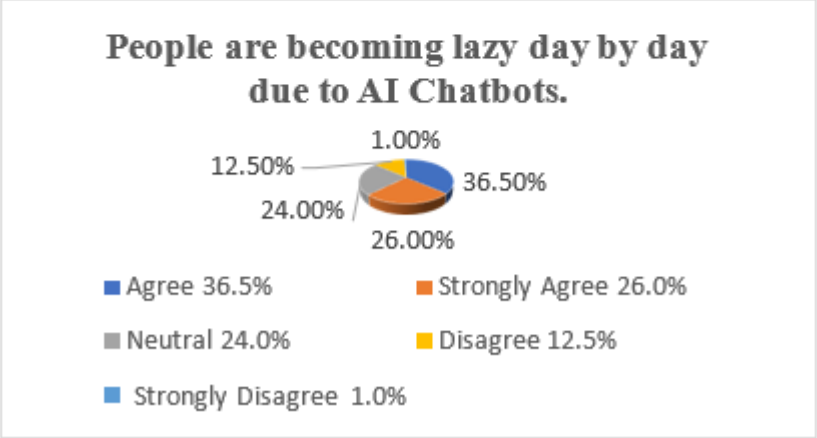

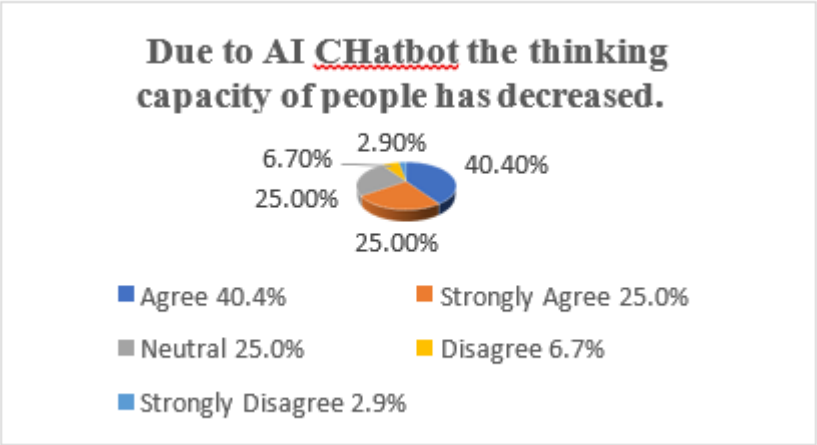

Summary of the Findings:

1. The data was gathered from individuals with knowledge and experience in AI chatbots. Among the surveyed population, 11.5% were employees, 6.7% were postgraduates, 9.6% were graduates, and 45.2% were undergraduates.
2. When asked respondent for their primary purpose of AI chatbot 73.01% of respondents use AI chatbots

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for education, 12.5% for marketing and social media, 10.6% for e-commerce, and only 3.8% for healthcare, indicating low trust in AI for healthcare applications.

3. When surveyed about the impact of AI chatbots on task productivity, 65.4% of respondents affirmed its helpfulness, 25% expressed uncertainty, and 9.6% reported no improvement, with 9% attributing this to a lack of knowledge about chatbots. Regarding the future of AI chatbots in displacing human employment, 14.44% strongly agreed, 30.8% agreed, and 15.8% disagreed, emphasizing the potential for human upskilling to mitigate AI's impact.
4. When asked respondent how effective do you agree that AI Chatbots gives accurate answers,57% say chatbot are effective, 9% say strongly effective and 30% say neutral & 3% say not effective.
5. When asked respondent to AI help us to learn technical skills 59% say it help us to learn technical skills like coding, photo and video editing, tally etc. these such practical things AI help us to teach whereas 28% say may be it helps and 14% say AI do not help us to teach technical skills.
6. When surveyed about whether AI chatbots are up-to-date with current educational standards and knowledge, 50% agree, with 7.7% strongly agreeing. Meanwhile, 32.7% are neutral, unsure if they are up-to-date. 7.7% disagree, and 1.9% strongly disagree.

The findings suggest a diverse demographic of respondents, with a notable emphasis on educational use of AI chatbots. While there is a prevalent trust in AI chatbots for task productivity and technical skill acquisition, skepticism remains regarding their efficacy in healthcare and their ability to replace human employment. The perception of accuracy varies, with a significant portion acknowledging AI's effectiveness, yet a notable segment expressing uncertainty. Concerns also arise regarding the currency of AI chatbots in educational contexts, highlighting a need for ongoing assessment and updating to align with evolving standards.

Suggestions:

- Many respondents say that while using chatbot they feel their knowledge can get enhanced because whatever question which they ask to the chatbot, they are able to get the productive answer to the question.
- AI chatbots have the potential to give positive impact overall critical thinking. By engaging in conversations with AI chatbots, we can alleviate speaking anxiety and boost learning enjoyment, which in turn can foster critical thinking skills.
- Many respondent say that chatbot helps in problem solving but with the help of chatbot, the thinking capacity of the consumers are decreased in finding solution, slowly and gradually human will completely depend upon the AI.
- Maybe because the knowledge will be freely available no need to search the topic everywhere and because of ready availability of knowledge the human mind activeness has become low.
- Instead of seeing AI as a chatbot, consider it an AI Knowing Teacher who answers all your questions and doesn't say no to any question. A human teacher knows when to stay quiet as well, and lets you think it on your own or intensifies your curiousity. But an AI Chatbot makes a person lazy by answering all the questions. Out of compulsiveness one doesn't think, so certainly knowledge will grow but not critical thinking skills. We would need proper training on how to use AI Chatbots. AI can be coded to be personalised for students.

Conclusion:

The study on AI Chatbots reveals key insights into their usage, impact, and perceptions. With their increasing

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integration into daily life, it's crucial to assess their role in society. The findings show widespread awareness and usage of AI Chatbots, primarily for educational purposes. While they enhance productivity and provide accurate answers, concerns about privacy, security, and potential job displacement persist. Despite their benefits, there are worries about AI Chatbots' impact on critical thinking and creativity. Many fear overreliance could lead to decreased individual capacity and increased laziness. Trust in AI Chatbots varies, emphasizing the need for improved accuracy and reliability. Demand for more features exists, but security remains a priority due to rising cybersecurity concerns. In conclusion, while AI Chatbots offer efficiency and convenience, caution is necessary in their development and use. Developers must address privacy and security issues, and users should view them as tools for augmentation, not replacements for human thought. With responsible development, AI Chatbots can continue improving daily life while minimizing drawbacks.

References:

Oke, S. A. (January 2004). Artificial Intelligence: A Review of the literature. University of Lagos: https://www.researchgate.net/publication/228809837_ ARTIFICIAL_INTELLIGENCE_A_R EVIEW_OF_THE_LITERATURE.

Romao, G. (June 2021). A Literature review on chatbots in education: An Intelligent chat agent. Catholic University of Mozambique: https://www.researchgate.net/publication/352384737_.

Nakul Subramanyam, B. P. (2018). AUTOMATION & ARTIFICIAL INTELLIGENCE – BOON OR BANE: (Vol. 4). CMR University, Bangalore: Organization and management.

Davide Calvaresi, S. E.-P. (June, 2023). Exploring agent-based chatbots: a systematic literature review. Switzerland: Journal of Ambient Intelligence and Humanized Computing.

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