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# AI-DRIVEN STUDENT ENGAGEMENT STRATEGIES: EXPLORING THE POTENTIAL OF CHATGPT IN EDUCATION

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**Abstract**
The study explores the impact of user experience on student expectancy in Chat GPT, emphasizing the mediating role of student engagement. Targeting students in higher education in India, aged 18-30 years, the data was gathered from 234 participants through a structured questionnaire employing convenience sampling. The questionnaire comprised two sections: demographic profiles and variables such as Perceived Usefulness, Facilitating Conditions, Content & Navigation, Expectancy, and Student Engagement in the AI chat bot. Analysis revealed significant correlations among these variables, indicating that perceived usage, facilitating conditions, and content & navigation positively affect expectancy in Chat GPT. Regression analysis underscored the predictive influence of these factors on expectancy. In addition, student engagement was identified as a mediator in the relationship between user experience and expectancy. The study highlights the importance of enhancing user experience and engagement to boost students' expectations and satisfaction with the educational chat bot. Recommendations are for a collaborative effort by the key stakeholders in developing new functionalities within a supportive framework for responsible use, content creation and digital competency enhancement, while preserving the spirit of integrity, critical thinking and innovation among students. This research contributes to the expanding field of AI in education, providing valuable insights for developers, educators, and institutions aiming to optimize AI chat bots for better educational outcomes.
***(Keywords: AI Chat bots, User Experience, Student Engagement, Educational Technology, Expectancy in Chat GPT)***

## INTRODUCTION

The 21st century, with innovation and sustainable development as key watchwords, is regarded as an epoch of digital transformation and disruption, manifested globally. In accordance with these, experts demand a disruptive change in Education system which must embrace a teaching and learning approach, to enable learners master skill to interact with and within the digital society. Artificial intelligence (AI) is the latest disruptive technology which is getting effectively integrated to the education sector especially in higher education, which is revolutionising the learning experience, offering personalised learning, redesigning learning methodology, and optimising administrative work. The challenge here is to maintain good learning outcomes by creating learning platforms that cater to student expectations by providing a learning environment which can guarantee student enthusiasm and engagement.

Education, nowadays, has become more flexible and accessible online. E-Learning has revolutionised the traditional classroom learning to a more effective and interactive learning experience to students and education is, thus changing in content, design and delivery. Al has been successfully deployed in educational arena to face a major challenge in E learning i.e. maintaining good student learning outcomes. Chat GPT, which is natural language-based AI chat Bot, can understand and process human language. With Chat GPT, students can communicate like talking to peers, seek help and explanation on learning materials and get instant feedback (Wang et al 2023). Thus, Chat GPT by creating a supportive learning environment which is interactive as well as engaging to the students, enriches their understanding and is instrumental in maintaining good learning outcomes. The present study shows how the user experience of the Gen AI platform, as Chat GPT in the form of perceived

usefulness, facilitating conditions and ease of use positively influence learning expectations and creates increased student engagement in learning outcomes.

**OBJECTIVES**

- To examine the influence of user experience on student expectancy in ChatGPT
- To investigate the mediating effect of student engagement in the association between user experience and student expectancy in ChatGPT

**LITERATURE REVIEW**

UN SDG4 envisages quality education through innovative, interactive and inclusive education content, giving lifelong learning opportunities for all (Rane N,2023). Artificial Intelligence (AI) has been leveraged to provide quality education through intelligent, personalised and adaptive learning systems, making it a powerful tool globally- recognised by UN for the achievement of Global Goals. AI, being integral to Industry 4.0, is set to trigger fourth revolution in Education, (Fakri, et al, 2024). In education, AI has been accorded 'Strategic Value', (Seldon &Abidoye ,2018). Generative AI (Gen AI) is a specific subarea of AI that employs programs to operate on large data sets, to identify patterns and then generate new works of text, imagery, video, and even computer code based on the instructions- 'prompts' given. Gen AI because of this potential to generate 'human like output' has been now effectively integrated in the educational field, globally (Chan etal,2023). Generative models like Chat GPT with its capability to generate human like text is a cutting-edge development in the domain of AI (Lund, 2023).

Chat GPT, a conversational system engineered by Open AI- introduced in the year 2022, has revolutionised the use of AI in higher education (Hu,2023). Chat GPT is an AI based a conversational Chat bot (Dempere etal, 2023). This chat bot has been 'pretrained' on massive text data to generate human like output for wide range of textual inputs. ChatGPT can enhance student learning in higher education by providing personalized and interactive experiences, facilitating access to information, assisting with writing, and improving linguistic skills (Achour etal,2024). (Samala et al), in their 2024 study on 'Chat GPT- Pros and Cons in Education' maintained that ChatGPT can play a significant role in higher education by providing personalized tutoring and assistance, encouraging active learning and creative thinking, improving students' academic skills, and creating customized learning pathways to support both students and educators. Potential benefits include its ability to generate human-like responses and adapt to the user's language, making it an effective tool for personalized learning. (Graefen,2024).

'User acceptance is key to successful uptake of technological innovations' (Davis, 1989) and the students, who are most beneficiary of these educational innovation like Chat GPT, are no exception. This user/student acceptance stems from the user/student experience on the perceived use, ease of use, facilitating conditions and value of these technologies in the learning environment. Chan, C.K., & Hu W. (2023) in their study among University Students observed that the students have a positive attitude towards Chat GPT, favouring its active integration in higher education because of the potential benefits in the form of 'personalized learning support, writing and brainstorming assistance, and research and analysis capabilities'. The manner the students perceive Chat GPT in their learning scenario, their views, their concerns, and experiences will impact their eagerness to use as well as its integration in their learning practices, (Chan et al, 2023). (Fakhri et al, 2024) in their exploratory study among higher education students on Gen AI Tools maintained students' perception and attitude towards Chat GPT, the reliability and satisfaction derived from using it, played a crucial role in achieving learning objectives or outcomes. The student perception of the learning environment (curriculum content, learning resources, student support services), their competencies and the methodology of teaching impact significantly their approach to learning and naturally their learning outcomes (Biggs, 1999,2011). (Boubker, O. 2023) in his study in Moroccan HEIs found that the perceived usefulness of ChatGPT, which is influenced by factors like output quality, perceived ease of use, positively influences ChatGPT use and student satisfaction, leading to enhanced individual impact, which could be interpreted as increased student engagement and motivation to use the learning tool.

**Perceived Usefulness**

Walczak, K., & Cellary, W., (2023) maintained that students have widely adopted generative AI tools like ChatGPT, primarily for purposes like problem-solving, information search, and programming. 'Personalized learning support, writing and brainstorming assistance, and research and analysis were regarded as potential benefits' among university students (Chan et al,2023). Abilities like summarization, text/code generation, and answering questions on expert topics, which can impact learning and instructions were perceived as useful by (Laato, S., et al., 2023). The perceived usefulness of Generative AI in education includes its ability to enable personalized learning experiences, create engaging and interactive content, foster 21st-century skills, and provide adaptive

assessments that are more accurate and less anxiety-inducing for students (Kadaruddin, K. 2023). The use of GenAI for various purposes in education, such as generating questions and assignments, aiding in self-learning, and creating administrative documents. The potential for GenAI to enhance the efficiency of the writing process by providing alternative responses and simplifying the brainstorming phase (Yeralan, S.N., & Lee, L.A. 2023).

**Facilitating Conditions**

Addressing students' concerns, tailoring GenAI technologies to student needs, developing guidelines and strategies for responsible implementation, and promoting effective learning outcomes are necessary for creating an environment to promote AI introduction as per (Chan & Hu 2023) .(Bahroun, Z., et al., 2023) identified transparent GAI models unbiased, responsible, ethical and promoting interdisciplinary approach as the facilitating conditions in education. (Nikolopoulou, K. 2024) argued that initiative must be made to provide appropriate training and support for students and educators to understand AI tools, interpret outputs, and use them ethically. The study by Bobula highlighted support and training to academic staff to ensure their AI readiness and ability to adapt to technological changes and provision of sufficient resources and autonomy for educators to implement the necessary changes. Bobula, M. (2024) identified personalized learning experiences, task automation and intelligent content creation, adaptive access and intelligent tutoring as key facilitating conditions for the introduction of generative AI in higher education.

**Ease of Use-Navigation and Content**

(Klayklung, P et al., 2023) found that ChatGPT can enhance the "content and navigation" and "ease of use" of the learning experience by providing personalized and interactive conversations, facilitating meaningful interactions between students and the system, assisting with administrative tasks to allow more personalized educator-student interactions, and serving as a tool for remote learning to provide access to educational resources outside of traditional classrooms. In a study (Hamid, H et al. 2023) observed that ChatGPT highly impacted group motivation through collaboration and engagement of members though some students raised concerns over reliability and dependability of information provided. Murad, I. A et al., (2023) identified ChatGPT's content and navigation, which contribute to its ease of use, include its accessibility, personalized interactions, conversational structure, and economic viability. Both students and educators can benefit from ChatGPT's utility in various educational tasks such as crafting course frameworks, generating subject-specific materials, composing essays, and navigating complex problems.

**Student Engagement**

In the ‘Handbook of Research on Student Engagement’, (Christenson et al 2012) maintained that ‘student engagement refers to students’ active involvement in educationally effective practises and their commitment to educational goals which is an essential pathway to highly valued educational achievement’. (Reev,2013) explored the four interrelated dimensions of behavioural, emotional, cognitive and agentic engagement which corresponds to involvement of student in learning activities, mental effort to complete tasks, students’ feelings towards learning environment and act of taking initiative by the student respectively. A learning environment supportive of these dimensions especially agentic can create a more supportive environment that can energize students for a more active and succour student engagement (Chiu ,2021). The presence of ChatGPT adds interest to studying by providing fast and easy access to information and also facilitates learning through the exchange of ideas and group discussions (Al Yakin et al 2023).

**THEORETICAL FRAMEWORK**

**Theory of Planned Behaviour (TPB)**

(Ajzen, 1991)in his explanation of the Theory of Planned Behavior maintained that ‘attitudes , subjective norms and perceived behavioural control’ are three main factors that influence behavioural intensions which in turn determine behaviour of an individual. ‘An individual's positive or negative evaluations of performing a behavior’ is attitude. ‘Perceptions of social pressures and expectations’ develop subjective norms. Belief on personal ability and presence of facilitating or inhibiting factors affecting behavior is reflected in perceived behavioural control. In the area of AI integration in education, TPB suggests that students' engagement with course materials and activities (such as online platforms or educational apps) can be predicted by their attitudes towards these tools, perceived social pressures to use them, and their confidence in using such technologies effectively (Ajzen, 1991).

**Technology Acceptance Model (TAM)**

As maintained by (Davis, 1989) The Technology Acceptance Model, ‘perceived usefulness (PU) and perceived ease of use (PEOU) are key determinants of users' attitudes towards and intentions to use technology’. The extent to which an individual believes their performance and productivity can be enhanced by the use of a particular technology is PU or perceived usefulness, while the degree to

which an individual believes that using technology will be 'free from effort is PEOU. According to TAM these beliefs or perception, affects actual usage behavior. In educational contexts, TAM has been used to understand students' engagement with digital learning platforms and tools, where PU and PEOU are associated with increased engagement and adoption of educational technologies (Davis, 1989).

**CONCEPTUAL FRAMEWORK AND HYPOTHESIS**

The construct of this study highlights the role of User Experience in Chat GPT, as determined by Perceived Usefulness, Ease of Use (content and navigation) and Facilitating Conditions, in enhancing the student expectancy to fulfil their learning outcomes, by directly or indirectly influencing the degree of student engagement.

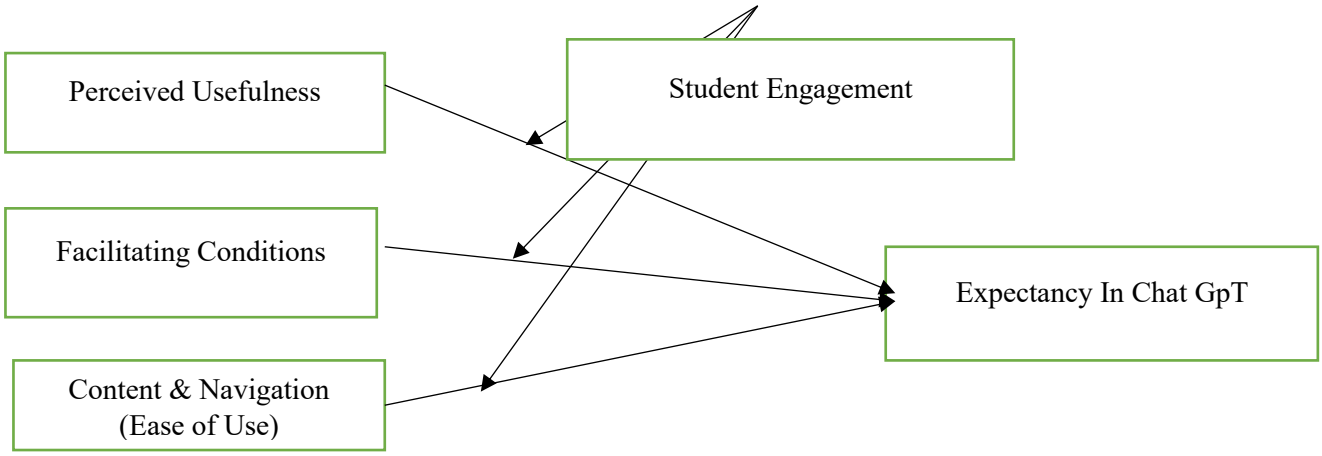


***Figure 1: Conceptual Model***

**Hypothesis**

H1: Perceived Usefulness has a significant and positive influence on student expectancy in Chat GPT.
H2: Facilitating Conditions have a significant and positive influence on student expectancy in Chat GPT.
H3: Content and Navigation has a significant and positive influence on expectancy in Chat GPT.
H4: Student Engagement mediates the relationship between User Experience and Expectancy in Chat GPT.

**METHODOLOGY**

**Sample and Data Collection**

This study targeted individuals aged 18-30 years to investigate their perceptions and interactions with AI chatbots. A total of 234 responses were gathered using a structured questionnaire. Convenience sampling was employed to select participants, ensuring a diverse representation within the target age group.

The questionnaire used in this study has two main parts. The first part collected demographic data, including respondents' gender, age, education level, field of study, frequency of ChatGPT usage, primary purpose for using ChatGPT, how they became aware of ChatGPT, access to technology, and overall experience with AI. The second part focused on assessing several constructs: Perceived Usefulness in AI Chatbot (5 questions), Facilitating Conditions in AI Chatbot (4 questions), Content & Navigation (Ease of Use) in AI Chatbot (6 questions), Expectancy in AI Chatbot (Dependent Variable) (4 questions), and Student Engagement in AI Chatbot. The questions were adapted from the study by Ni and Cheung (2023).

**Data Analysis**

Various statistical techniques were used to analyse the data collected to study the relationships between the variables and their impact on expectancy in chatbots. Descriptive statistics provided an overview of the demographic profile and usage patterns of the respondents. Correlation analysis examined the associations between Perceived Usage, Facilitating Conditions, Content & Navigation, Expectancy in Chatbot, and Student Engagement. Regression analysis was employed to assess the predictive power of these variables on Expectancy in Chatbot.

**Statistical Tools**

The analysis was performed using SPSS software. Cronbach's alpha was used to assess the reliability of the scales. Pearson correlation coefficients were used to explore the relationships between

variables. Multiple regression analysis was conducted to test the hypotheses and to understand the direct and indirect effects of the independent variables on the dependent variable.

**Table 1: Reliability Statistics**

| Variable | Cronbach's Alpha | No of Items |
|---|---|---|
| Perceived Usefulness | 0.874 | 4 |
| Facilitating Conditions | 0.842 | 4 |
| Content and Navigation | 0.871 | 6 |
| Expectancy | 0.856 | 4 |
| Student Engagement | 0.825 | 5 |

## RESULTS

### Demographic Characteristics of Respondents

The study surveyed respondents aged 18-30 from Kerala, capturing key demographic details such as gender distribution, educational backgrounds, and employment status. It also assessed other variables to study the user experience.

**Table 2: Demographic Profile**

| Demographic Variables | | No. of Respondents | Percentage |
|---|---|---|---|
| **Gender** | Male | 153 | 65.4 |
| | Female | 81 | 34.6 |
| **Age** | 18-30 | 234 | 100 |
| **Education** | High School | 50 | 21.1 |
| | Graduate | 152 | 65 |
| | Post Graduate | 32 | 13.7 |
| **Field of Study** | Science | 30 | 12.8 |
| | Technology | 76 | 32.5 |
| | Engineering | 4 | 1.7 |
| | Humanities | 2 | 0.9 |
| | Social Sciences | 2 | 0.9 |
| | Business | 110 | 47 |
| | Other | 10 | 4.3 |
| **Frequency of ChatGPT Usage** | Daily | 40 | 17.1 |
| | Weekly | 76 | 32.5 |
| | Monthly | 28 | 12.0 |
| | Rarely | 68 | 29.1 |
| | Never | 22 | 9.4 |
| | Total | 234 | 100.0 |
| **Primary Purpose of Using Chat GPT** | Academic Learning | 114 | 48.7 |
| | Professional Development | 46 | 19.7 |
| | Personal Interest | 34 | 14.5 |
| | Research | 26 | 11.1 |
| | Other | 14 | 6.0 |
| **How did you learn about Chat GPT** | School/College | 56 | 23.9 |
| | Work | 14 | 6.0 |
| | Online Resources | 94 | 40.2 |
| | Friends/Family | 56 | 23.9 |

| | | | |
|---|---|---|---|
| | Others | 14 | 6.0 |
| **Do you have access to technology** | Yes | 224 | 95.7 |
| | No | 10 | 4.3 |
| **Rate your overall experience using AI** | Very Uncomfortable | 30 | 12.8 |
| | Uncomfortable | 6 | 2.6 |
| | Comfortable | 132 | 56.4 |
| | Very Comfortable | 66 | 28.2 |

Note: Sample Size N = 234

The demographic profile of the 234 respondents highlights a diverse group in terms of gender, education, field of study, and ChatGPT usage. The sample includes 65.4% males and 34.6% females, all aged between 18-30 years. Educationally, the majority are graduates (65%), followed by those with a high school diploma (21.1%) and postgraduates (13.7%). The respondents come from various fields, with significant representation from business (47%) and technology (32.5%). Regarding ChatGPT usage frequency, 17.1% use it daily, 32.5% weekly, 12% monthly, and 29.1% rarely, while 9.4% have never used it. The primary reasons for using ChatGPT are academic learning (48.7%), professional development (19.7%), personal interest (14.5%), research (11.1%), and other purposes (6%). Most respondents discovered ChatGPT through online resources (40.2%), school/college (23.9%), and friends/family (23.9%). Access to technology is widespread, with 95.7% having access. The overall experience with AI is generally positive, with 56.4% feeling comfortable and 28.2% very comfortable using AI technologies like ChatGPT, while 12.8% feel very uncomfortable and 2.6% uncomfortable. This demographic data provides a comprehensive overview of the respondents, indicating a well-educated and tech-savvy group, largely comfortable with using AI tools for various purposes.

**Correlation Analysis**

**Table 3: Correlations Between Variables**

| Variables | Perceived Usage | Facilitating Conditions | Content and Navigation | Expectancy in Chatbot | Student Engagement |
|---|---|---|---|---|---|
| **Perceived Usage** | **1** | | | | |
| **Facilitating Conditions** | **.780**** | **1** | | | |
| **Content and Navigation** | **.738**** | **.837**** | **1** | | |
| **Expectancy in Chatbot** | **.501**** | **.502**** | **.611**** | **1** | |
| **Student Engagement** | **.558**** | **.576**** | **.578**** | **.533**** | **1** |

**** Correlation is significant at the 0.01 level (2-tailed).**

Table 3 shows the correlation coefficients between Perceived Usage, Facilitating Conditions, Content and Navigation, Expectancy in Chatbot, and Student Engagement. All correlations are significant at the 0.01 level, demonstrating strong relationships among the variables. Perceived Usage is strongly correlated with Facilitating Conditions (r = .780) and Content and Navigation (r = .738). Facilitating Conditions are also highly correlated with Content and Navigation (r = .837). Expectancy in Chatbot has moderate correlations with Perceived Usage (r = .501), Facilitating Conditions (r = .502), and Content and Navigation (r = .611). Additionally, Student Engagement is significantly positively correlated with all variables: Perceived Usage (r = .558), Facilitating Conditions (r = .576), Content and Navigation (r = .578), and Expectancy in Chatbot (r = .533). These findings suggest that higher perceived usage, better facilitating conditions, and improved content and navigation are associated with higher expectancy in chatbots and greater student engagement, underscoring the interconnectedness of these factors in enhancing engagement with educational chatbots. (Venkatesh et al. 2003) found that perceived ease of use and facilitating conditions significantly influence users' behavioral intentions to use technology, which aligns with the strong correlations observed between Perceived Usage and Facilitating Conditions. In addition, Almarashdeh et al.( 2011) demonstrated that content quality and navigation ease are critical for user satisfaction and continued use of e-learning systems, supporting the strong relationship between Content and Navigation and other variables.

**Regression Analysis**

**Table 4: Regression Analysis**

| | Unstandardized Coefficients | | Standardized Coefficients | | | Model Summary | | ANOVA | |
|---|---|---|---|---|---|---|---|---|---|
| **Model** | **B** | **Std. Error** | **Beta** | **t** | **Sig.** | **R** | **R Square** | **F Value** | **Sig.** |
| (Constant) | 4.481 | 1.173 | | 3.820 | 0.000 | .617[a] | 0.381 | 47.128 | .000[b] |
| Perceived Usage | 0.258 | 0.099 | 0.222 | 2.593 | 0.010 | | | | |
| Facilitating Conditions | 0.248 | 0.139 | 0.189 | 1.790 | 0.075 | | | | |
| Content & Navigation | 0.230 | 0.088 | 0.256 | 2.608 | 0.010 | | | | |

**Table 5: Hypothesis Testing**

| | Impact | | | |
|---|---|---|---|---|
| Variables | | Beta Coefficients | p- value | Hypothesis Support |
| Perceived Usage | Expectancy in chatbot | 0.222 | 0.010 (p < 0.05) | H1 is accepted |
| Facilitating Conditions | Expectancy in chatbot | 0.189 | 0.075 (p >0.05) | H2 is rejected |
| Content & Navigation | Expectancy in chatbot | 0.256 | 0.010 (p < 0.05) | H3 is accepted |

Table 4 shows the regression analysis results, illustrating the relationships between Perceived Usage, Facilitating Conditions, Content & Navigation, and Expectancy in Chatbot. The model accounts for 38.1% of the variance in Expectancy in Chatbot ($R^2 = 0.381$) and is statistically significant ($F = 47.128$, $p < 0.001$). Significant positive effects are observed for Perceived Usage ($\beta = 0.222$, $p = 0.010$) and Content & Navigation ($\beta = 0.256$, $p = 0.010$). However, Facilitating Conditions ($\beta = 0.189$, $p = 0.075$) do not show a significant effect.

Table 5 details the hypothesis testing results. Hypothesis H1, which proposes that Perceived Usage positively affects Expectancy in Chatbot, is supported ($\beta = 0.222$, $p < 0.05$). Hypothesis H2, suggesting that Facilitating Conditions positively affect Expectancy in Chatbot, is rejected ($\beta = 0.189$, $p > 0.05$). Hypothesis H3, asserting that Content & Navigation positively affect Expectancy in Chatbot, is supported ($\beta = 0.256$, $p < 0.05$). These results highlight the significance of perceived usage and content quality in enhancing user expectancy in chatbots. (Davis 1989) highlighted the significance of perceived usefulness and ease of use in technology acceptance, which aligns with the positive impact of Perceived Usage and Content & Navigation on Expectancy in Chatbot. The role of user-friendly technology and supportive content in promoting user engagement and positive expectancy is well-documented in studies on educational technology and user experience (Fredricks, Blumenfeld, & Paris, 2004).

**Mediation analysis using Hayes PROCESS macro**

**Table 6: Direct Effects of AI Features on Expectancy in Chatbot through Student Engagement**

| Predictor Bias | Outcome Variable | Direct Effect (β) | LLCI (Direct) | ULCI (Direct) | p-value (Direct) |
|---|---|---|---|---|---|
| Perceived Usage | Expectancy in chatbot | 0.2929 | 0.1677 | 0.4181 | <.0001 |
| Facilitating Conditions | Expectancy in chatbot | 0.3272 | 0.1832 | 0.4711 | <.0001 |
| Content& Navigation | Expectancy in chatbot | 0.3498 | 0.2572 | 0.4425 | <.0001 |

**Table 7: Indirect Effects of AI Features on Expectancy in Chatbot through Student Engagement**

| Predictor Bias | Outcome Variable | Indirect Effect (β) | LLCI (Indirect) | ULCI (Indirect) | p-value (Indirect) |
|---|---|---|---|---|---|
| Perceived Usage | Expectancy in chatbot | 0.2029 | 0.1169 | 0.3016 | <.0001 |
| Facilitating Conditions | Expectancy in chatbot | 0.2346 | 0.1357 | 0.3422 | <.0001 |
| Content& Navigation | Expectancy in chatbot | 0.1194 | 0.0553 | 0.1967 | <.0001 |

Table 6 presents the direct and indirect effects of AI features on the expectancy of chatbots, considering the role of student engagement. The direct effects show that Perceived Usage (β = 0.2929, $p < 0.0001$), Facilitating Conditions (β = 0.3272, $p < 0.0001$), and Content & Navigation (β = 0.3498, $p < 0.0001$) have significant positive impacts on Expectancy in Chatbot. The lower and upper limits of the confidence intervals (LLCI and ULCI) for these direct effects do not include zero, which confirms their significance.

In terms of indirect effects mediated through Student Engagement, Perceived Usage (β = 0.2029, $p < 0.0001$), Facilitating Conditions (β = 0.2346, $p < 0.0001$), and Content & Navigation (β = 0.1194, $p < 0.0001$) also show significant positive impacts on Expectancy in Chatbot. The confidence intervals for these indirect effects further support their significance. These findings underscore the importance of AI feature perceptions in shaping users' expectations of chatbots both directly and indirectly by enhancing student engagement. These results are in alignment with the previous studies of (Alalwan et al. 2020), (Sun and Teng 2021), and (Cherer, Siddiq, and Tondeur 2019).

**DISCUSSION**

This study provides essential insights into how students in higher education (18-30 years) interact with AI chatbots like ChatGPT, substantiating the role of User Experience in the form of perceived usefulness, facilitating conditions, and ease of content navigation in shaping student expectations and engagement. The significant positive effect of perceived usefulness on expectancy in chatbots (β = 0.222, $p = 0.010$) aligns with findings by (Hsiao and Chen 2015) and (Alalwan et al. 2018), which underscore the critical role of perceived benefits in technology acceptance. Although facilitating conditions positively correlate with expectancy, the regression analysis reveals no significant direct effect (β = 0.189, $p = 0.075$). However, its significant indirect effect through student engagement (β = 0.2346, $p < 0.0001$) highlights the importance of a supportive environment, as noted by (Zhou et al. 2019) and (Venkatesh et al. 2016). Ease of use, assessed through content and navigation, significantly predicts expectancy (β = 0.256, $p = 0.010$), supporting the findings of (Hwang and Chang 2021) and (O'Brien and Toms 2015), which emphasize the impact of usability on user satisfaction. The significant indirect effects of perceived usefulness (β = 0.2029, $p < 0.0001$), facilitating conditions (β = 0.2346, $p < 0.0001$), and ease of use (β = 0.1194, $p < 0.0001$) on expectancy through student engagement are consistent with studies by (Bond et al. 2020) and (Henrie et al. 2015), indicating that engaged users are more likely to develop positive expectations towards AI chatbots. These findings underscore the interconnectedness of these factors in enhancing user engagement and expectancy in AI technologies.

**CONCLUSION**

This study highlights the impact of user experience on expectations related to ChatGPT, particularly among students aged 18-30 years. The findings reveal that perceived usefulness, facilitating conditions, and ease of content and navigation are pivotal in shaping users' expectations and satisfaction with ChatGPT. The study emphasizes the need to meet users' changing needs and improve their educational experiences These insights suggest that enhancing the overall user experience is the key to increased expectations and consequent student engagement in such AI driven chatbots like Chat GPT. With the student engagement playing a mediating role in the relationship between user experience and expectancy, the necessity is for a highly ‘engaging’ AI chatbot- reliable, personalised and well-integrated to future academic requirements. This necessitates the development of student engagement strategies from the perspectives of four key stakeholders: developers, administrators, teachers, and students (Liu et al,2023). Developers must be up breast on transitions in higher educations field with the challenges, it carries to students and the student expectations from such chatbots in resolving those bottlenecks. Such cognizance will sustain ongoing improvements in chatbot interfaces and functionalities to provide quality content, customised and reliable responses, which is easily accessible and economical on a highly user-friendly interface. On

the part of administrators, and institutions, the need is to develop policies and guidelines for Gen AI integration for ensuring reliability and responsible use of AI technologies, assuring supportive attitudes and satisfaction, and encouraging digital competency enhancement, to improve learning outcomes (Chan, C.K., & Lee, K.K. 2023) Teachers can enrich their teaching methods and content by using various types of AI, thus creating more opportunities and possibilities for innovation in the education sector, Yu et al,(2024). Students can experience a richer, higher-quality learning experience, provided they develop the required digital literacy to harness these learning resources, preserving at the same time, the spirit of integrity, critical thinking and innovation. The collaborative efforts of these stakeholders can create a new horizon in higher education harnessing the power of AI, Chat GPT.

**RECOMMENDATIONS**

AI Chatbots can empower students but the empowerment comes at a price (Dai et al ,2023). The issue of integrity and reliability in using such chatbots have been raised by many researchers along with concern on its adverse impact on critical thinking of the students and their innovative aspirations. However, a collaborative effort on the part of stakeholders in creating and maintain a learning environment which promotes judicious use of such technologies for academic progression can offer a solution to this concern. This study has focussed on perceived usefulness, facilitating conditions, and ease of content and navigation as determinants of user experiences based on exposure of population under study. However, some research studies have pointed out content quality, frequency of use and competence of user (Stamate, A. N., et al 2021) (Fakhri etal, 2024) (McCoy et al 2020) influencing user expectations which might pave way for future research, with advanced versions of Chat GPT on roll. Future research should continue exploring these areas and long-term effects of AI integration in providing quality education.

**References**

Achour, K., Laanoui, M.D., & Ourahay, M. (2024). The impact of ChatGPT in-education A comprehensive overview. 2024 International Conference on Global Aeronautical Engineering and Satellite Technology (GAST), 1-10.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211.

Al Yakin, Ahmad et al. "Transforming Online Learning Management: Generative Models on ChatGPT to Enhance Online Student Engagement Scale (OLE)." Idarah (Jurnal Pendidikan dan Kependidikan) (2023): n. pag.

Alalwan, A. A., Dwivedi, Y. K., & Rana, N. P. (2018). Factors influencing adoption of mobile banking by Jordanian bank customers: Extending UTAUT2 with trust. **International Journal of Information Management**, 37(3), 99-110.

Alalwan, A. A., Dwivedi, Y. K., Rana, N. P., & Simintiras, A. C. (2020). "Factors influencing adoption of mobile banking by Jordanian bank customers: Extending UTAUT2 with trust." International Journal of Information Management, 51, 102035.

Almarashdeh, I., Sahari, N., Zin, N. A. M., & Alsmadi, M. (2011). "The Success of Learning Management System among Distance Learners in Malaysian Universities." Journal of Theoretical and Applied Information Technology, 28(2), 128-135.

Biggs, J. (1999). What the student does: Teaching for enhanced learning. Higher Education Research & Development, 18(1), 57–75. Biggs, J. B. (2011). Teaching for quality learning at university: What the student does. McGraw-Hill Education (UK)

Bond, M., Buntins, K., Bedenlier, S., Zawacki-Richter, O., & Kerres, M. (2020). Mapping research in student engagement and educational technology in higher education: A systematic evidence map. **International Journal of Educational Technology in Higher Education**, 17(1), 1-30.

Boubker, O. (2023). From chatting to self-educating: Can AI tools boost student learning outcomes? Expert Syst. Appl., 238, 121820.

Chan, C. K. Y., & Hu, W. (2023). Students' voices on generative AI: perceptions, benefits, and challenges in higher education. International Journal of Educational Technology in Higher Education, 20(1). https://doi.org/10.1186/s41239-023-00411-8

Chiu, Thomas K.F.. (2021). Applying the self-determination theory (SDT) to explain student engagement in online learning during the COVID-19 pandemic. Journal of Research on Technology in Education. 1-17. 10.1080/15391523.2021.1891998.

Christenson, S. L., Reschly, A. L., & Wylie, C. (Eds.). (2012). Handbook of research on student engagement.Springer Science.

Dai, Y., Liu, A., & Lim, C.P. (2023). Reconceptualizing ChatGPT and generative AI as a student-driven innovation in higher education. *Procedia CIRP*.

Davis, F. D. (1989). "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology." MIS Quarterly, 13(3), 319-340.

Dempere J, Modugu K, Hesham A and Ramasamy LK (2023) The impact of ChatGPT on higher education. Front. Educ. 8:1206936. doi: 10.3389/feduc.2023.1206936

Fakhri, M. M., Ahmar, A. S., Isma, A., Rosidah, R., & Fadhilatunisa, D. (2024). Exploring Generative AI Tools Frequency: Impacts on Attitude, Satisfaction, and Competency in Achieving Higher Education Learning Goals. EduLine: Journal of Education and Learning Innovation, 4(1), 196–208. https://doi.org/10.35877/454RI.eduline2592

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). "School Engagement: Potential of the Concept, State of the Evidence." Review of Educational Research, 74(1), 59-109.

Graefen, B., & Fazal, N. (2024). Chat bots to Virtual Tutors: An Overview of Chat GPT's Role in the Future of Education. Archives of Pharmacy Practice.

Henrie, C. R., Halverson, L. R., & Graham, C. R. (2015). Measuring student engagement in technology-mediated learning: A review. **Computers & Education**, 90, 36-53.

Hsiao, C. H., & Chen, C. H. (2015). What drives smartwatch adoption intention? Comparing Apple and non-Apple watches. **Library Hi Tech**, 33(2), 207-223.

Hu, K. (2023, February 2). ChatGPT sets record for fastest-growing user base—analyst note. Reuters. Retrieved from https:// www. reuters. com/ technology/ chatgpt- sets- record- fastest- growing- user- base- analyst- note- 2023- 02- 01/

Hwang, G. J., & Chang, S. C. (2021). A formative assessment-based mobile learning approach to improving students' learning attitudes and performances in mathematics. **Computers & Education**, 133, 83-93.
Liu, M., Ren, Y., Nyagoga, L.M., Stonier, F., Wu, Z., & Yu, L. (2023). Future of education in the era of generative artificial intelligence: Consensus among Chinese scholars on applications of ChatGPT in schools. *Future in Educational Research*.Lund, B. D., & Wang, T. (2023). Chatting about ChatGPT: how may AI and GPT impact academia and libraries?. Library Hi Tech News, 40(3), 26-29.
McCoy, L. G., Nagaraj, S., Morgado, F., Harish, V., Das, S., & Celi, L. A. (2020). What do medical students actually need to know about artificial intelligence? Npj Digital Medicine, 3(1). https://doi.org/10.1038/s41746-020- 0294-7
Mohaimenul, Islam, Jowarder. (2023). The Influence of ChatGPT on Social Science Students: Insights Drawn from Undergraduate Students in the United States. Indonesian Journal of Innovation and Applied Sciences, doi: 10.47540/ijias.v3i2.878
Mónica, de, la, Roca., Miguel, M., Chan., Antonio, Garcia-Cabot., Eva, García-López., Héctor, R., Amado-Salvatierra. (2024). The impact of a chatbot working as an assistant in a course for supporting student learning and engagement. Computer Applications in Engineering Education, doi: 10.1002/cae.22750
Ni, A., & Cheung, A. (2023). Understanding secondary students' continuance intention to adopt AI-powered intelligent tutoring system for English learning. Education and Information Technologies, 28(3), 3191-3216.
O'Brien, H. L., & Toms, E. G. (2015). Engagement as process in computer-mediated environments. **Journal of the Association for Information Science and Technology**, 59(6), 938-955.
Oseremi onesi-ozigagun, yinka james ololade, nsisong louis eyo-udo, & damilola oluwaseun ogundipe. (2024). Revolutionizing education through ai: a comprehensive review of enhancing learning experiences. International Journal of Applied Research in Social Sciences, 6(4), 589–607. https://doi.org/10.51594/ijarss.v6i4.1011
Prema, Sankaran., Raksha, Deshbhag., Krishna, Durbha., Raj, Gururajan., Xujuan, Zhou. (2023). Student Perceptions of ChatGPT Through an Expectancy Value Theory. doi: 10.1109/wi-iat59888.2023.00089
Rane, N. (2023). Roles and Challenges of ChatGPT and Similar Generative Artificial Intelligence for Achieving the Sustainable Development Goals (SDGs). SSRN Electronic Journal. https://doi.org/10.2139/ssrn.4603244
Reeve, John marshall. (2013). How Students Create Motivationally Supportive Learning Environments for Themselves: The Concept of Agentic Engagement. Journal of Educational Psychology. 105. 579. 10.1037/a0032690.
Samala, A.D., Zhai, X., Aoki, K., Bojić, L., & Žikić, S. (2024). An In-Depth Review of ChatGPT's Pros and Cons for Learning and Teaching in Education. Int. J. Interact. Mob. Technol., 18, 96-117.
Scherer, R., Siddiq, F., & Tondeur, J. (2019). "The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education." Fakhri Computers & Education, 128, 13-35.
Stamate, A. N., Sauvé, G., & Denis, P. L. (2021). The rise of the machines and how they impact workers' psychological health: An empirical study. Human Behavior and Emerging Technologies, 3(5), 942–955. https://doi.org/10.1002/hbe2.315
Thi, Kim, Anh, Vo., Huong, Nguyen. (2024). Generative Artificial Intelligence and ChatGPT in Language Learning: EFL Students' Perceptions of Technology Acceptance. Journal of university teaching and learning practice, doi: 10.53761/fr1rkj58
Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). "User Acceptance of Information Technology: Toward a Unified View." MIS Quarterly, 27(3), 425-478.
Venkatesh, V., Thong, J. Y., & Xu, X. (2016). Unified theory of acceptance and use of technology: A synthesis and the road ahead. **Journal of the Association for Information Systems**, 17(5), 328-376.
Wang, N., Rebolledo-Mendez, G., Matsuda, N., Santos, O. C., & Dimitrova, V. (2023). Artificial Intelligence in Education. 24th International Conference, AIED 2023, Tokyo, Japan, July 3–7, 2023. https://doi.org/10.1007/978-3-031-36272-9
Weiqi, Tian., Jingshen, Ge., Yu, Zhao., Xu, Zheng. (2024). AI Chatbots in Chinese higher education: adoption, perception, and influence among graduate students—an integrated analysis utilizing UTAUT and ECM models. Frontiers in Psychology, doi: 10.3389/fpsyg.2024.1268549
Yu, C., Yan, J., & Cai, N. (2024). ChatGPT in higher education: factors influencing ChatGPT user satisfaction and continued use intention. *Frontiers in Education*.
Zhou, T., Lu, Y., & Wang, B. (2019). The relative importance of website design quality and service quality in determining consumers' online repurchase behavior. **Information Systems Journal**, 19(5), 477-503.

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