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A STUDY ON EVALUATING DETERMINANTS OF ADOPTION OF ARTIFICIAL INTELLIGENCE IN RESEARCH AMONG THE FACULTY MEMBERS OF MUMBAI AND THANE REGION

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ABSTRACT

Purpose: *The research evaluates the determinants of the adoption of AI in Research Among the Faculty Members.*

Design/Method/Approach: *210 faculty members were chosen for the current study, and the model was build using Structural equation model.*

Findings: *It was found that "Effort Expectancy (EE), Facilitating Conditions (FC), Performance Expectancy - (PE), Social Influence (SI) do not have a significant impact on Behavioral Intention (BI) towards the adoption of Artificial Intelligence (AI) in research among faculty members Whereas it was found that Hedonic Motivation (HM) and Security (SEC) has a significant impact on Behavioral Intention (BI)" towards adoption of AI in research among the Faculty Members.*

Practical Implication: *Education is an ever-growing sector where any person can gain knowledge till, they depart the world. This study will be useful in understanding the various factors that lead to the adoption of AI, as in the current times, the application of AI has grown significantly. This study evaluates the determinants of the adoption of AI in Research among faculty members.*

Originality/values: *This study extends the research made by Venkatesh et al. 2004 UTAUT model and Parasuraman, A., et al. (2005). E-service quality model by combining the factors of both the models and evaluating the determinants of adoption of AI in research among the faculty members*

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Ethical Compliance: *Strict ethical rules were followed throughout the study, and participant permission and anonymity were guaranteed. It complies with all relevant legal requirements and is approved by the appropriate ethics body. The study acts impartially, respects the rights of the participants, and discloses its findings honestly.*

Keywords: *UTAUT, E-service Quality, Artificial Intelligence*

INTRODUCTION

In the middle of the 1950s, artificial intelligence (AI) first emerged. Despite its early promise, it faltered and appeared to be coming to an end for several reasons, including technological constraints related to managing various sorts of data, matching human thought processes, and data processing capabilities. The emergence of artificial intelligence systems that overcome historical limitations may be attributed in large part to the fast progress of technology. The development of AI tools and their potential advantages for businesses are at an unprecedented rate. To reap the benefits of AI, gain a competitive edge, and improve performance, Businesses are racing to acquire, deploy, and make use of AI technologies for a variety of organisational tasks. The concept of AI tools and their contents are still developing, particularly in light of the incorporation of several contemporary technologies and data types, including big data and the Internet of Things (Y. Wang et al. 2019). An increasing amount of research is being done on many different aspects of artificial intelligence (AI) tools. The effectiveness of these AI-based tools is interesting, especially when compared to earlier methods and algorithms (Razzaghi et al., 2019). A special emphasis is placed on preventing biases that can inadvertently enter models, particularly when learning is derived from biased data (Lambrecht and Tucker 2019).

One of the most popular theories successfully reproduced several times is the "unified theory of acceptance and use of technology" (UTAUT; Venkatesh et al. 2003). It has been used to analyze a range of technologies and even scenarios outside employee adoption. "Four factors "performance expectancy, effort expectancy, social influence, and facilitating conditions" are identified by UTAUT as predictors of intention to use and technology

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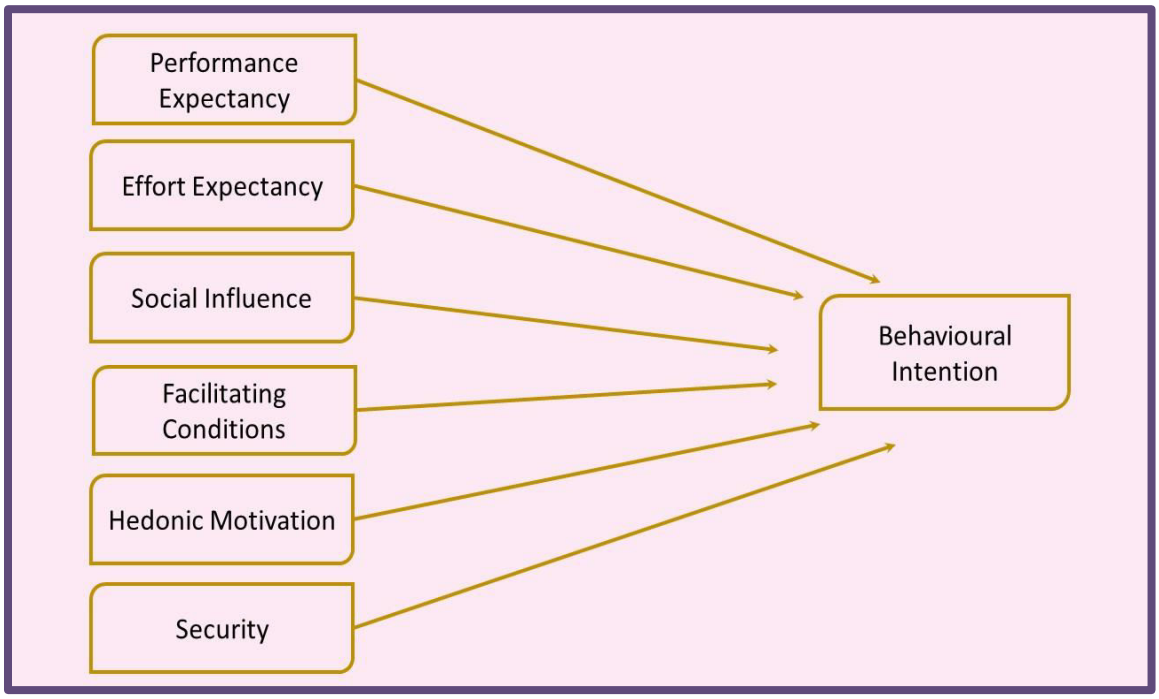
usage. Here is how these constructs are defined: The level to which an individual expects that using a system would enhance their capacity to complete their task is referred to as performance expectancy; the ease of use of the system is known as effort expectancy; Social influence is the notion held by significant individuals that the new system should be used while facilitating conditions is the idea held by an individual that the system's technological and organizational foundation will allow it to be used. In Venkatesh et al. 2004 A detailed theoretical model called the UTAUT2 was created to fully capture the variables affecting people's acceptance and usage of technology. By adding crucial concepts like "Performance Expectancy and Hedonic Motivation," which highlight the "perceived benefits, ease of use, and enjoyment of technology," UTAUT2 expands upon the original UTAUT model. To account for moderating elements like gender, age, and voluntariness of usage, it also takes into consideration social impact and enabling environments.



The foundation of the concept of e-service quality is the service quality construct. According to Seth et al. (2005), there isn't yet a recognized standard or established technique for assessing the quality of electronic services. However, e-service quality standards are not as well-defined as conventional service quality benchmarks (Zeithaml et al., 2002). Service quality is the whole evaluation of a particular service provider based on how well they perform compared to the general expectations of customers for providers in that industry, according to Parasuraman et al. (1988). E-service quality is defined by Bitner et al. (1990) as the general opinion of customers about how good or bad an organization's services are. According to Asubonteng et al. (1996), it is the difference between what customers think they should receive and what they obtain regarding service quality. These definitions all have the same underlying meaning, despite perhaps minor language differences (Khalil, 2011). Ojo (2010) states that while the terminology may vary, the core idea of service quality is assessing if the "perceived level of service delivery meets, exceeds, or falls short of what the customer anticipates."

REVIEW OF LITERATURE:

1. **Dr. R. Jayadurga & Mrs. S. Rathika (2023).** The paper aimed to highlight the vital role that educators play in the educational process, the effects of the pandemic on distance learning, and the significance of lifelong learning. It also emphasizes how artificial intelligence (AI) has the ability to change how educational approaches are implemented in the modern world. According to the findings, teachers play a crucial role in the educational system and have adapted to support good attitudes and behaviors in the classroom, especially when it comes to online learning during a pandemic. In education, lifelong learning is still essential. AI provides a way to evaluate and update educational policy, encouraging creative methods of instruction and learning in educational establishments.

2. **Rajasshrie, Pillai., et al. (2023).** This study used the Technology Adoption Model (TAM) in conjunction with context-specific factors to examine "students' intention to adopt (ADI) and actual usage (ATU) of artificial intelligence (AI)-based teacher bots (T-bots) for learning." The study found that several criteria, including "perceived utility, anthropomorphism, personalization, interaction, perceived trust, and perceived

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intelligence, influenced the ADI of T-bots." It was shown that students' preference for conventional human teachers in the relationship between ADI and the ATU of T-bots is adversely mediated by the classroom. Senior officials from Indian higher education institutes provided insightful commentary on the use of T-bots in the study.

3. **Mihail, Gastfer (2023).** The aim of this study was to investigate the reasons for the delayed uptake of AI-based adaptive learning systems in educational institutions as well as the issues surrounding these aspects. The goal of the paper was to create a trustworthy tool that would allow researchers to assess all of the variables influencing educators' use of adaptive learning environments in the classroom. The results of the study showed that although variables such as product quality, confidence, and expertise of instructors are significant, they might not be the only or even the most relevant ones affecting teachers' use of AI platforms in the classroom. For AI adoption in schools to be effective, other elements, including reducing extra effort, encouraging teacher ownership and trust, offering support systems, and resolving ethical issues, are also essential. These elements may even be more accurate in predicting teachers' involvement with the platform.

OBJECTIVE OF THE STUDY:

1. To evaluate the determinants of the adoption of AI in Research Among the Faculty Members.
2. To give appropriate suggestions to enhance users of AI generative

HYPOTHESES:

Ha_1: Effort Expectancy (EE) significantly influences Behavioral Intention (BI)

Ha_2: Facilitating Conditions (FC) significantly influences Behavioral Intention (BI)

Ha_3: Hedonic Motivation (HM) significantly influences Behavioral Intention (BI)

Ha_4: Performance Expectancy (PE) significantly influences Behavioral Intention (BI)

Ha_5: Security (SEC) significantly influences Behavioral Intention (BI)

Ha_6: Social Influence (SI) significantly influences Behavioral Intention (BI)

RESEARCH METHODOLOGY:

Using a standardized questionnaire, information was gathered from 210 faculty members. The minimum necessary sample size is 200, with an effect size of 0.3, statistical power of 0.9, two latent variables, twelve observable variables, and a probability level of 0.05. The current study has employed non-probabilistic purposive sampling. For this study, data were gathered using both primary and secondary sources. The structural equation model method was employed for this investigation, and SMART PLS was the analytical instrument of choice.

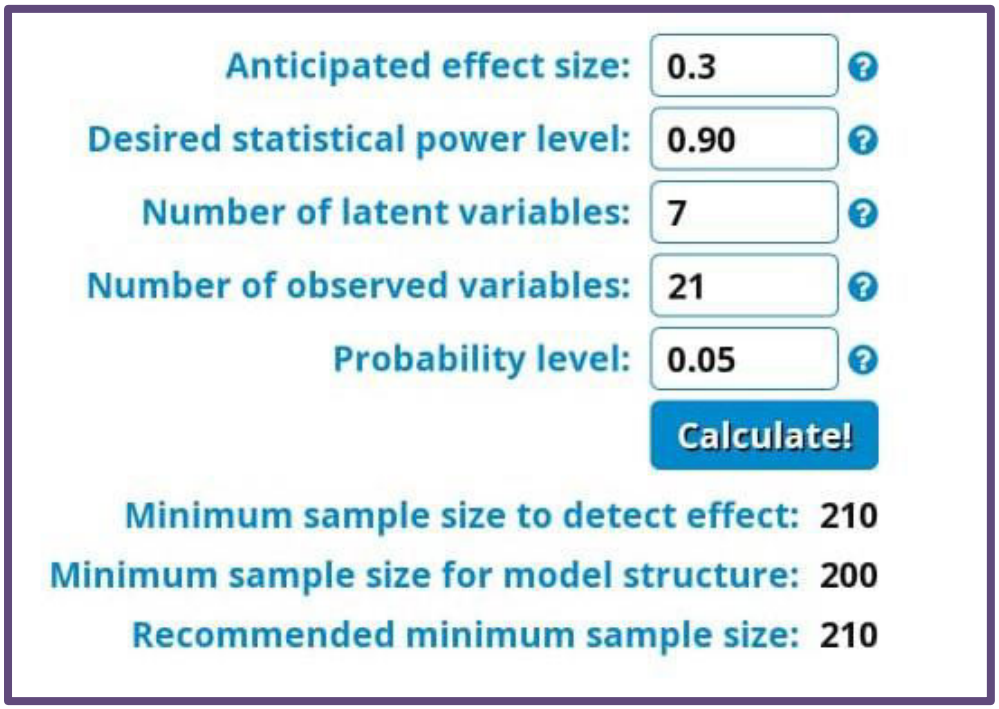

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Table No: 1 Summary of Demographics

Variables	Category	Frequency	Percentage
Age	Under 25	**35**	**16.67**
	25-34	**49**	**23.33**
	35-44	**37**	**17.62**
	45-54	**32**	**15.23**
	55-64	**28**	**13.33**
	65 or over	**29**	**13.82**
Academic Rank	Assistant Professor	**25**	**11.91**
	Associate Professor	**36**	**17.14**
	Full Professor	**39**	**18.57**
	Lecturer/Instructor	**33**	**15.72**
	Postdoctoral Researcher	**29**	**13.81**
	Graduate Student	**21**	**10.00**
	Other	**27**	**12.85**
Years of Experience in Research	Less than 1 year	**23**	**10.96**
	1-5 years	**47**	**22.39**
	6-10 years	**34**	**16.17**
	11-15 years	**49**	**23.34**
	15 years and above	**57**	**27.14**
Institution Type	University	**59**	**28.09**
	College	**51**	**24.29**
	Research Institute	**63**	**30.00**
	Other	**37**	**17.62**

Data was collected from 210 faculty members out of which 35 respondents belonged to Under 25 years with 16.67 percent, 49 respondents belonged to 25-34 years of age with 23.33 percent, 37 belonged to 35-44 years with 17.62, 32 belonged to 45-54 years with 15.23 percent, 28 respondents belonged to 55-64 years with 13.33 percent and 29 respondents belonged to 65 years or over with 13.82 percent. As for their Academic Rank, it was seen that 25 respondents with 11.91 percent were assistant professors, 36 respondents with 17.14 percent were associate professors, 39 with 18.57 percent were full professor, 33 with 15.72 percent were lecturers/Instructors, 29 respondents with 13.81 percent were postdoctoral researcher, 21 with 10.00 percent were graduate students and 27 respondents with 12.85 percent were others. In the case of years of experience in research it was seen that 23 respondents with 10.96 percent had less than 1 year of experience, 47 respondents with 22.39 percent has 1-55 years' experience, 34 with 16.17 percent had 6-10 years' experience, 49 respondents with 23.34 percent has 11-15 years' experience and 57 respondents with 27.14 percent had 15 years and above experience. In the type of Institution category, it was seen that 59 respondents with 28.09 percent belonged to university, 51 respondents with 24.29 percent belonged to colleges, 63 respondents with 30.00 percent belonged to research institute and 37 respondents with 17.62 percent belonged to others.

DATA ANALYSIS AND INTERPRETATION:

Table No: 2 Reliability and validity

Path	Cronbach's alpha	rho_A	Composite reliability	Average variants
BI	0.919	0.920	0.949	0.860
EE	0.830	0.836	0.898	0.746
FC	0.844	0.851	0.906	0.762
HM	0.922	0.922	0.950	0.865
PE	0.920	0.936	0.949	0.862
SEC	0.910	0.913	0.943	0.847
SI	0.848	0.870	0.908	0.768

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As all the values of Cronbach's alpha >0.7 indicating reliability of responses and it is also seen that composite reliability >0.7 and AVE >0.5 indicating convergent validity.

Table No.; 2 Discriminant validity

Path	BI	EE	FC	HM	PE	SEC	SI
BI	0.928						
EE	0.693	0.864					
FC	0.646	0.636	0.873				
HM	0.713	0.643	0.496	0.930			
PE	0.987	0.377	0.352	0.446	0.928		
SEC	0.666	0.565	0.657	0.495	0.305	0.920	
SI	0.656	0.766	0.719	0.567	0.390	0.589	0.876

Square root of AVE > correlation (r) thus, it can be concluded that their exist an adequate discriminant validity.

Figure No: 1 SEM Model

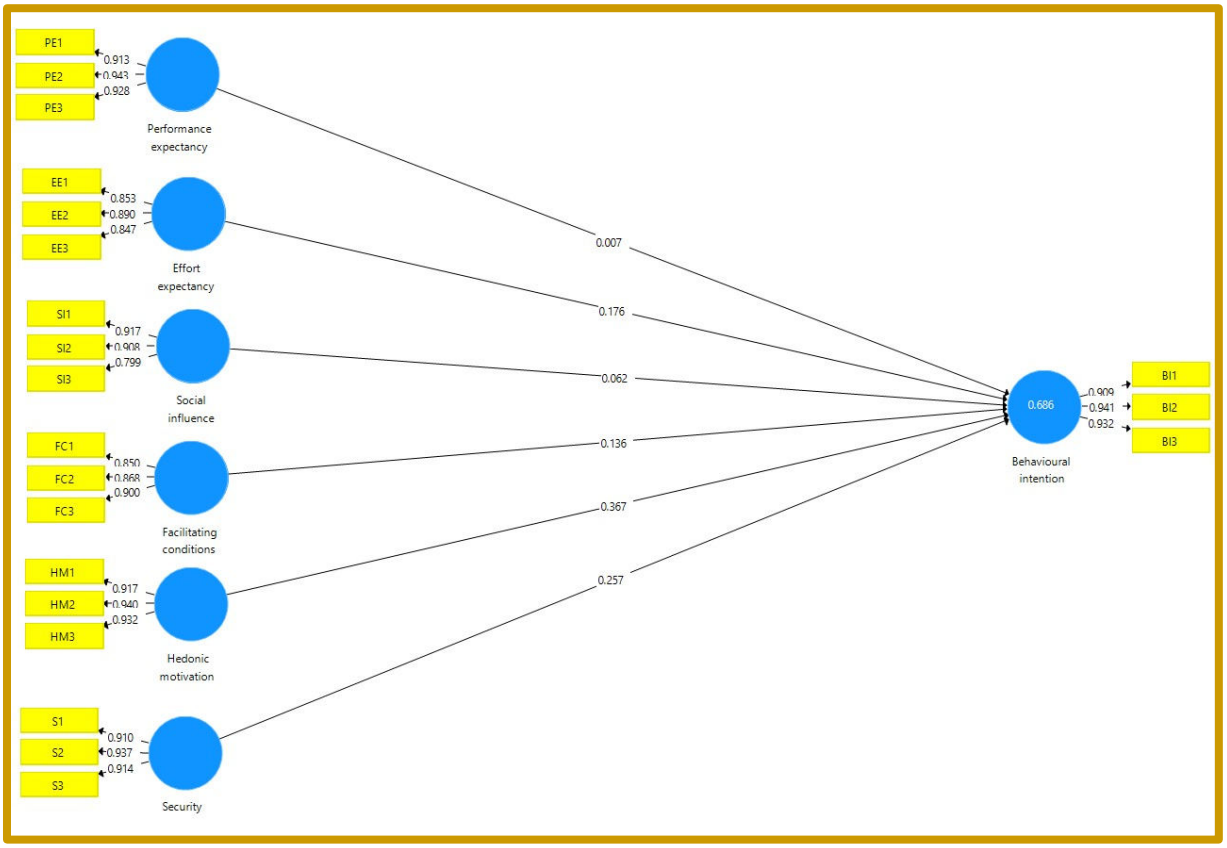

Table No: 3 Path Coefficients

Path	Beta coefficient	T value	P value
EE → BI	**0.176**	**1.644**	**0.101**
FC → BI	**0.136**	**1.481**	**0.139**
HM → BI	**0.367**	**3.830**	**0.000**
PE → BI	**0.007**	**0.094**	**0.925**
SEC → BI	**0.257**	**2.892**	**0.004**
SI → BI	**0.062**	**0.583**	**0.560**

P (value) < level of significance 5%; thus, Ho is rejected and H1 is accepted in all the cases, indicating a significant impact of hedonic motivation on behavioral Intention and Security on Behavioural Intention.

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CONCLUSION:

The study's findings provide an understanding of the factors influencing faculty members' use of artificial intelligence in their research. Interestingly, hedonic motivation and security are important determinants of their behavioral intention. Faculty members' interest in adopting AI tools appears to be stimulated by hedonic motivation, representing the pleasure and delight of using AI tools. A strong motivator is the appeal of a satisfying user experience, where AI technologies make research procedures interesting and approachable. Additionally, the importance of security in determining behavioral intention highlights how crucial trust and data protection are to adopting AI. When using AI in their work, faculty members place high importance on guaranteeing that their research data is safe. Faculty members may comfortably interact with AI technology without sacrificing the quality of their work, which helps ease fears and facilitate the use of AI in research. Essentially, the results highlight the intricate nature of AI adoption in the study. It is significantly impacted by the emotional and security-related aspects of adopting technology rather than being just rational. Academics are drawn to AI not just for its applications but also because it protects their priceless data assets and enhances their research experiences. Institutions and stakeholders looking to promote and assist AI deployment in academic research environments must comprehend these reasons.

DISCUSSION:

The concept of getting pleasure from using technology falls under hedonic motivation. Faculty members appear to find AI applications to be interesting, pleasurable, and easy to use when it comes to AI in research. An enhanced desire to include AI in research activities might result from a favorable user experience using AI technologies. It promises to improve efficiency and productivity in research activities. Because AI may help researchers accomplish their objectives more quickly and effectively—by cutting down on the time and effort needed for data analysis, literature reviews, and other research tasks—faculty members may be encouraged to embrace it.

When using AI in research, security considerations are crucial. Teachers must have faith that their information and research results will be protected. Given the substantial influence of security on behavioral intention, it is likely that faculty members will give the security of critical research data top priority when deciding which adoptions to support. Keeping up with technology developments might provide a competitive edge in the academic setting. Early AI use by faculty members may lead to better research results and more recognition in their fields.

RECOMMENDATIONS:

1. Give top priority to creating AI technologies that faculty members can utilize with ease and enjoyment.
2. Increase the attraction of AI adoption in research, concentrating on intuitive functions and user-friendly interfaces.
3. Highlight how applying AI technologies in research may provide faculty members with a sense of satisfaction and happiness.
4. Demonstrate how artificial intelligence (AI) may be used to enhance research procedures beyond their practical applications.
5. Establish strong security and data protection protocols for AI technologies to foster faculty member confidence.
6. Clearly explain the security measures and procedures to protect research data.
7. Foster trust among the academic community and encourage faculty members to share their good experiences using AI.
8. Work together with educational establishments to customise AI solutions to meet their unique research requirements.
9. Jointly develop AI solutions that satisfy their needs and solve their worries, get feedback from academics and researchers.
10. Reduce possible problems and develop AI technologies with ethical concerns in mind.
11. Increase the use of AI tools, and allow academics to alter them to fit their tastes and research needs.
12. Provide examples of practical applications and success stories of how AI has enhanced research results, emphasizing the advantages of security and emotions.

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