Perception of Artificial Intelligence Among Post Graduate Students in Maharashtra, India

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Abstract:

The purpose of this study is to examine the perception of artificial intelligence among the post graduate students in Maharashtra India. To explore the study, 100 samples (50 male and 50 females) of post graduate students of engineering and Management were selected randomly and the data was collected by survey method with the help of PAIS questionnaire developed by Nick Yee. The major focus of the study was to evaluate the perception of artificial intelligence among the male and female postgraduates and to compare the trust and threat perception of artificial intelligence between male and female postgraduates. Ultimately, the findings revealed that there is no significant difference in the perception of artificial intelligence among the male and female postgraduate students. But, on the contrary, the significant difference in the trust and Threat perception of artificial intelligence was detected between male and female postgraduates in Maharashtra, India. In the study, t- test and ANOVA was used for statistical data analysis.

Keywords: Perception, Trust perception, Threat Perception, Artificial intelligence, post graduates, Maharashtra, India.

Introduction:

Artificial intelligence (AI) is known as advanced tool of computer systems that can perform tasks which typically require human intelligence. Basically, the term "artificial intelligence" was coined by John McCarthy, an American computer scientist, in 1956. The term artificial intelligence has been identified since the 20th century. But unfortunately, most of the people in India are unaware about Artificial Intelligence. Nowadays, artificial intelligence is upgrading itself with advanced technology and applications and new additions are being introduced day by day. Initially, artificial intelligence has been developed for the application in the fields like mathematics, gaming, and expert systems. The first application of artificial intelligence was developed with a program capable of playing chess and checkers in 1950. But later on, artificial intelligence applications have been entered into various industries and sectors, including finance, healthcare, transportation, and entertainment and manufacturing industry. In the present days, the practical applications of artificial intelligence are increased significantly in technology and data availability. Now, artificial intelligence is capable of understanding natural language, recognizing patterns, learning from experience, and making decisions. Also, it includes a broad range of techniques like machine learning, neural networks, natural language processing, computer vision, and robotics. In psychological perspective, artificial intelligence is a system that mimics human cognitive abilities and solves complex problems within various domains.

Perception of Artificial Intelligence around the Globe:

There are varied and contradictory aspects of perception of artificial intelligence in the context of its usefulness, efficiency, safety, privacy and ethical values. Firstly, AI Enhance the Efficiency, Majority of people perceive artificial intelligence as a tool helpful in automation technology, improving productivity, and optimizing processes in various industries, leading to greater efficiency and cost savings. Additionally, many people perceived artificial intelligence as the Innovator in Healthcare, because Artificial intelligence made an evolutionary change in healthcare sectors. artificial intelligence is proven as a promising technology for advanced healthcare domains with applications in medical diagnosis, personalized treatment, drug discovery, and predictive analytics to improve patient outcomes in healthcare areas. Similarly, nowadays, artificial intelligence applications are providing prompt services in mental health care domains like identifying the symptoms of mental or psychological disorders, categories the severity and determine the specific drugs and psychotherapies. On the contrary, artificial intelligence is perceived as a disruptor of employment, because most of the people's common threat is that AI could replace human jobs and increase the unemployment rate. As a result, AI will enforce the needs for reskilling and upskilling to adapt to new roles and responsibilities in the workforce.

Secondly, most people perceive artificial intelligence is an essential tool of service sector organizations, because it enhances customer experience. However, in the modern age of marketing the AI is proving tremendous utilities in retail, hospitality, and entertainment areas. Artificial intelligence applications are being used to personalize customer experiences, regularly recommend products to prospective customers and services, and manage interactions by chatbots and virtual assistants. Similarly, artificial intelligence is considered an exploration instrument of technological progress.

However, artificial intelligence is a spark for innovation, driving advancements in fields like autonomous vehicles, planning for smart cities, and quantum computing. As well as, some people perceived AI as artificial superintelligence (ASI) and raised the concerns about superintelligence. Artificial intelligence (AI) systems that are smarter than humans and potentially dangerous if not adequately regulated or compatible with human values.

Ultimately, the majority of the people agreed on the ethical questions about privacy of users, biased information or content entered into the system, accountability of ill effects. Furthermore, AI will create a hazardous impact on society. Because artificial intelligence will damage the norms of society. Therefore, there is a need for responsible AI development and appropriate implementations are necessary to reduce possible hazards and provide the guarantee and openness.

Perception of Artificial intelligence within different demographic areas in India.

In India, the perception of artificial intelligence (AI) is thoroughly different within demographic areas. The perception of artificial intelligence is influenced by several factors such as education, culture, socio-economic status, and awareness of technology. Some psychological perspectives of artificial intelligence perception within various demographic areas in India:

1. Urban Professionals and Educated Youth: The perception of artificial intelligence, according to many urban professionals and educated youth artificial intelligence is an opportunity for career advancement and innovation. Because artificial intelligence provides the new career platforms for innovation and creative features in technology which creates an opportunity and career enhancement. They perceive artificial intelligence as a tool for enhancing productivity, improving efficiency, and driving

economic growth. Additionally, perceived the positive attitude towards artificial intelligence -driven technologies such as virtual assistants, smart devices, and automation in urban areas.

2. Rural and Semi-Urban Population: Similarly, the perception of artificial intelligence less has influenced in rural and semi-urban areas due to less access to technology. Further, perception of artificial intelligence is weaker due to Limited use of artificial intelligence for educational purposes, less awareness of artificial intelligence within these demographic areas. Whereas, artificial intelligence is considered as a platform for curiosity and fascination, seeing it as a symbol of progress and modernization. Additionally, artificial intelligence helps in weather forecasting, precision farming.

3. Academics and Researchers: Academics and researchers are well known about artificial intelligence and they are utilizing the artificial intelligence tools in research and development, exploring its applications in fields like healthcare, agriculture, and education. On the contrary, many academics and researchers are focused on addressing ethical, societal implications of artificial intelligence. Also highlighted the issues of bias, fairness, and privacy.

4. Government and Policy Makers: Government officials and policymakers perceived artificial intelligence as a strategic priority for India's economic growth and planning upcoming strategies for unexpected issues in economic and agricultural areas. Additionally, the Indian government has strong Concerns about cybersecurity and ethical artificial intelligence governance.

Recently in 2024, the Indian government has passed a law against the artificial intelligence driven Deep Fake activities to avoid the social and political disturbances in India.

Ultimately, the perception of artificial intelligence in India is multifaceted, reflecting a complex interconnection of socio-cultural, economic, and technological factors within different demographic areas.

Rationale and significance of the study: -

The present study aims to inspect the perception of artificial intelligence among the post graduate students in Solapur, Maharashtra. In the study, six sub areas of perception in artificial intelligence among the male and female post graduate students have been studied. India is a diverse country with its multifaceted religious, cultural demographic aspects. Additionally, it is interesting to examine the perception of artificial intelligence between male and female post graduates.

Objectives:

1. To examine the perception of artificial intelligence between male and female post graduates.
2. To examine the Trust Perception of artificial intelligence between male and female post graduates.
3. To examine the Threat perception of artificial intelligence between male and female post graduates

Review of Literature:

ICCC- integrated command and control center has studied a perception of key components utilized in artificial intelligence for smart City planning and implementation. The study has been conducted with post graduate students to gain the knowledge on perception of the younger generation with respect to use of artificial intelligence in smart City program implementation. [*Manmohan G, Durai S, Rajesh G.A, Rajak A (2023*]

Grabanska G, Andrezejewaski M, Grabinski K (2021), explored a study about the perception of the potential usefulness of artificial intelligence in the academic curriculum of finance and accounting courses of graduate students. The study was conducted to investigate the perception of usefulness of artificial

intelligence among the graduate students learning in Cracow University of economics. The study explored the awareness of importance and required technology changes as the expectations of graduate students.

A study explored to analyze the perspectives on artificial intelligence among the health care students in Canada. In the study 78.77% participants reported that artificial intelligence technology would affect their career within upcoming years.

Similarly, 74.5% respondents highlighted the positive attitude regarding the new rule of artificial intelligence in their career fields. Additionally, students having a negative or opposite perspective on artificial intelligence they also agreed on the needs of artificial intelligence in their academic curriculum. [*Teng M, Singla R, You O, Gupta R, (2022)*]

In the study of Kurnaiti E.Y, Fithtaini R (2022), administered on the perception of QuillBot utilization as an AI tool in English writing among the postgraduate students. The qualitative study was performed with 20 postgraduate participants familiar with the QuillBot tool.

Finally, the outcomes revealed that the artificial intelligence powered QuillBot tool was significantly helpful in improving the quality of writings. Additionally, the study uncovered several benefits of QuillBot tools like enhancing students' positive attitude towards writing, providing multiple user-friendly features and helping students language development. The study explored the significant role of QuillBot in preparing for high quality writing.

A study explored to evaluate the patient's perception towards human artificial intelligence interaction in the healthcare sector in the USA. The major purpose of the study was to examine the perception of significant benefit risk utility of artificial intelligence clinical applications among the patients. The study revealed negative perceptions about privacy concerns, trust issues, communication barriers, less transparency in regulatory standards, liability risk. The findings supported that incompatibility with instrumental, technical, ethical and regulatory values were the reason for rejecting artificial intelligence tools in the health care sector, due to the risk associated with implementing AI applications in the diagnosis and treatment procedures. Additionally, the study was highlighted on regular audits, continuous monitoring of AI tools, and also evaluated the safety, quality transparency features in AI applications. [*Esmaeilzadeh P, Mirzaei T, Dharanikota S (2021)*]

A study administered by Jaiswal A, Arun C.J. (2021) to evaluate potentials of artificial intelligence for the transformation of the education system in India. The study was conducted with four subject matter experts working on AI technologies and four senior managers of Indian educational technology firms who develop AI applications for schools. The study revealed the significant importance of personalized learning, recommendation systems and adaptive assessments that are helpful for the students and the teachers. Also, the study highlighted the immense potentials of artificial intelligence tools in educational technology firms and the practical implications for the transformation of education systems in India.

As seen above, AI and its various aspects have been studied by several scholars like, the use of AI in government policy implementation, academic program implementation, AI and its effects on employment sectors, AI in content development and editing, AI in healthcare sector, AI in teaching – learning process etc. The present study in general focuses upon general perception of AI amongst the post graduate students and specifically focuses upon six sub areas of AI such as Trust, Understanding, Efficacy, Sociability, Influence and Threat.

Methods: -

Aim: - The purpose of the study is to examine the perception of artificial intelligence among the post graduate students in Maharashtra, India

Samples: -The present study was conducted on the sample of 100 college and university students (50 male and 50 female), the participants were selected from the engineering and Management fields that were relevant for the research objectives. Additionally, the participants who were using artificial intelligence tools for more than 3 years were excluded from the sampling process.

The data was collected through the survey method using a self-report questionnaire. In the study, purposive sampling technique was used in the data selection process.

Hypothesis: -

1. There is a similar perception of artificial intelligence between me and female postgraduate students.
2. The Threat perception of artificial intelligence in females will be greater than male postgraduate students.
3. There is similarity in trust perception of artificial intelligence between male and female postgraduates.

Instruments / Tools: -

In the present study Nick Yee's perception of artificial intelligence scale (PAIS) was used. The PAIS consists of 30 items. Moreover, PAIS is covered with 6 sub scales like trust, understanding, efficacy, sociability, influence and threat. The reliability and validity are 0.81 and 0.57 respectively.

Results: -

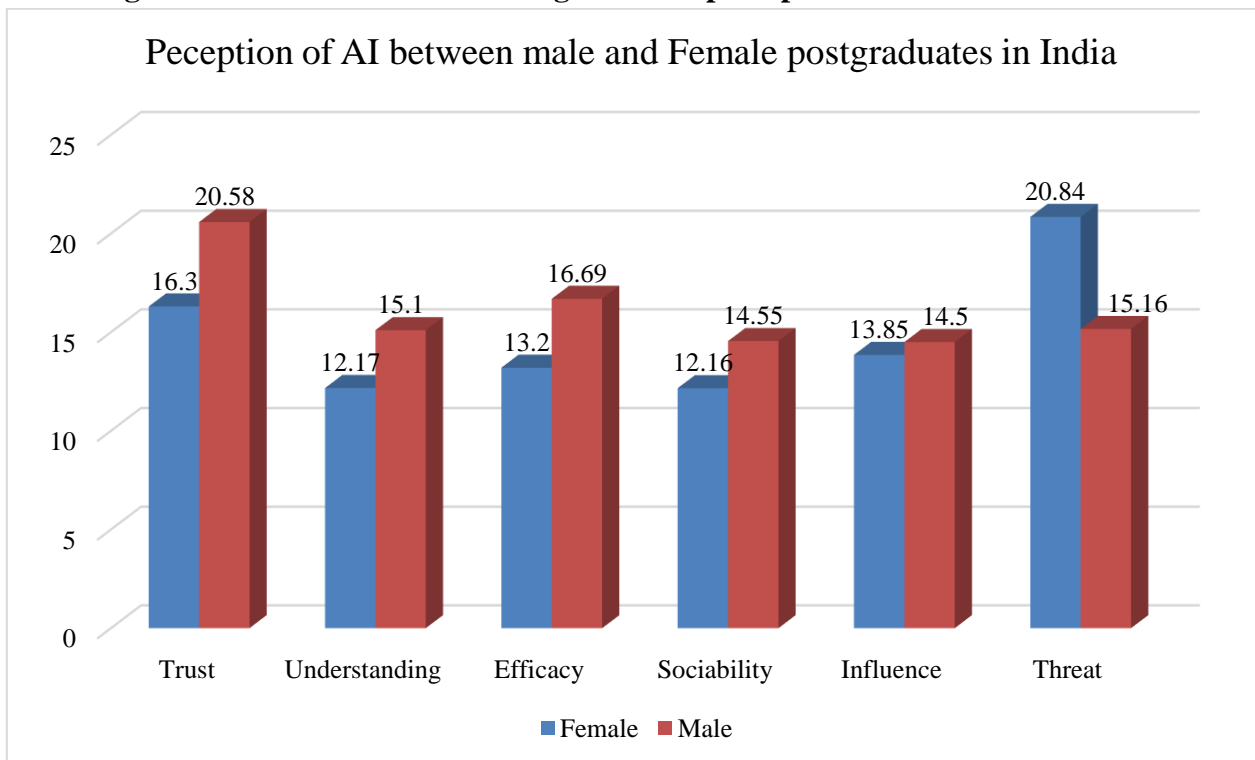**Figure 4.1: Indicates the mean of general AI perception within its six sub areas**

Peception of AI between male and Female postgraduates in India

Table 4.1: Mean of the perception of an artificial intelligence within 6 sub areas between male and female post graduates

Perception of AI		
Sub Areas	**Female**	**Male**
Trust	16.3	20.58
Understanding	12.17	15.1
Efficacy	13.2	16.69
Sociability	12.16	14.55
Influence	13.85	14.5
Threat	20.84	15.16
Average	*14.7533*	*16.0967*

Table 4.2: t-Test analysis of an artificial intelligence within 6 sub areas between male and female post graduates

t-Test: Two-Sample Assuming Equal Variances		
	Female	*Male*
Mean	14.7533333	16.096667
Variance	11.2135067	5.4529067
Observations	6	6
Pooled Variance	8.33320667	
Hypothesized Mean Difference	0	
df	10	
t Stat	-0.8060061	
P(T<=t) one-tail	0.21949289	
t Critical one-tail	1.81246112	
P(T<=t) two-tail	0.43898579	
t Critical two-tail	2.22813885	

Accordingly, P(<=t) one tail = 0.2194: This is the probability of observing a t-value less than or equal to the calculated t-value under the null hypothesis (no difference between the groups) for a one-tailed test. Since this value is greater than 0.05 (significance level of 0.05), it suggests that the observed difference between male and female postgraduates' overall perception scores is not statistically significant. Similarly, P(<=t) two tails = 0.4389: This is the probability of observing a t-value less than or equal to the calculated t-value under the null hypothesis for a two-tailed test.

Additionally, t critical two tails = 2.2281: This is the critical t-value for a two-tailed test at a significance level of 0.05 with degrees of freedom. Based on the statistical analysis, it appears that the null hypothesis cannot be rejected.

The probability values indicate that the observed difference in overall perception of artificial intelligence between male and female postgraduates is not statistically significant. Therefore, based on this analysis, there is insufficient evidence to conclude that there is a significant difference in overall perception of artificial intelligence between male and female postgraduates.

Table 4.3: Trust perception of artificial intelligence between male and female postgraduates.

t-Test: Two-Sample Assuming Equal Variances		
	Male	*Female*
Mean	20.06	16.78
Variance	3.731020408	7.68531
Observations	50	50
Pooled Variance	5.708163265	
Hypothesized Mean Difference	0	
df	98	
t Stat	6.8642905	
P(T<=t) one-tail	3.05847445	
t Critical one-tail	1.660551217	
P(T<=t) two-tail	6.1169489	
t Critical two-tail	1.984467455	

Based on the above statistical analysis, it indicates that the null hypothesis should be rejected. The probability of observing the calculated t-value under the null hypothesis is less than the significance level of 0.05 (since P(<=t) two tails = 6.1169). Additionally, the calculated t-value exceeds the critical t-value for a two-tailed test (1.984). Therefore, there is sufficient evidence to conclude that there is a statistically significant difference in trust perception of artificial intelligence between male and female postgraduates.

Table 4.4: Treat perception of artificial intelligence between male and female postgraduates.

t-Test: Two-Sample Assuming Equal Variances		
	Male	*Female*
Mean	15.24	20.04
Variance	11.77795918	2.36571
Observations	50	50
Pooled Variance	7.071836735	
Hypothesized Mean Difference	0	
df	98	
t Stat	9.02495674	
P(T<=t) one-tail	7.897726262	
t Critical one-tail	1.660551217	
P(T<=t) two-tail	1.5795452	
t Critical two-tail	1.984467455	

Based on the above statistical analysis, it indicates that the null hypothesis should be rejected. The probability of observing the calculated t-value under the null hypothesis is much smaller than the significance level of 0.05 (P(<=t) two tails = 1.5795), indicating statistical significance. Additionally, the calculated t-value likely exceeds the critical t-value for a two-tailed test (1.9844). Therefore, there is sufficient evidence to conclude that there is a statistically significant difference in threat perception of artificial intelligence between male and female postgraduates.

Discussion:

According to the results and findings in present study on the perceptions of artificial intelligence (AI) between male and female postgraduates yielded varied results. Firstly, the examination of overall perception indicated no statistically significant difference between male and female postgraduates. This suggests that, on an average, both genders perceive Artificial Intelligence similarly in terms of its overall impact, potential, and implications. Conversely, when exploring trust perception, the findings revealed a notable contrast. Male postgraduates exhibited a significantly greater trust in Artificial Intelligence compared to their female counterparts. This disparity underscores a potential gender-based divergence in the level of confidence placed in Artificial Intelligence. technologies. Finally, the investigation into threat perception highlighted another intriguing observation. While both male and female postgraduates recognized the potential threats posed by Artificial Intelligence, there was no statistically significant difference between the genders in this regard. This implies that, despite differing levels of trust, both male and female postgraduates share similar apprehensions regarding the potential risks associated with Artificial Intelligence adoption and development. These nuanced findings underscore the complexity of gender dynamics in shaping perceptions of Artificial Intelligence., highlighting the importance of further research in understanding these phenomena and their implications for the future of Artificial Intelligence. adoption and integration.

Limitations:

It is essential to accept and highlight certain limitations inherent in research while exploring the perceptions of artificial intelligence (AI) among male and female postgraduates in India. Firstly, the sample size and demographic representation might not fully capture the diverse range of opinions and experiences across different regions, educational backgrounds, and socio-economic statuses within India. As a result, it may affect the outcomes and findings of objectives in the research. Also, cultural and societal norms may influence respondents' perspectives, potentially leading to biased or skewed views. Furthermore, artificial intelligence technology is constantly developing its advanced versions and its applications means that perceptions can quickly become outdated. Therefore, it is a need of continuous research and exploration in this field to provide a more comprehensive understanding

Scope for Future Research:

The study on the perception of artificial intelligence among male and female postgraduates in Maharashtra, India opens an interesting route for future research and exploration. With its focus on six crucial sub-areas including trust, understanding, efficacy, sociability, influence, and Threat, this study will prove the groundwork for deeper investigations into the artificial intelligence perception within the Indian academic sectors.

Future research could explore into comparative analyses of different demographic groups, geographical regions, and educational disciplines to uncover variations in perception and attitude towards Artificial Intelligence. Additionally, future research could highlight the impact of technological advancements and societal changes on attitudes towards artificial intelligence.

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