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# IMPACT OF ARTIFICIAL INTELLIGENCE TOOL USAGE ON ANALYTICAL SKILL DEVELOPMENT AMONG MANAGEMENT STUDENTS IN NAVI MUMBAI

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**Abstract**
The higher education system to undergo completed by Artificial Intelligence (AI) tools particularly in management studies where analytical competence plays a vital role in academic and professional success. This study examine the influence of Artificial Intelligence tools usage on analytical skill development among management students in Navi Mumbai. Future manager must possess analytical skill like data interpretation, problem-solving, logical reasoning and evidence-based decision-making. This study adopts a quantitative method and primary data collected through a structured questionnaire given to undergraduate and postgraduate management students in Navi Mumbai. This study highlights that how often students use AI tools, why they use them and what types of tools they use for academic tasks like completing assignments, analysing data, preparing reports and doing project work. The development of analytical skill is evaluated through self-report measures that reflect student's ability to interpret data, identify patterns and make informed decisions .Correlation and regression analysis to examine how the use of AI tools is related to the improvement of students' analytical skills. The main purpose of the study to understand whether AI tools truly help students strengthen their analytical abilities or whether relying on these tools might reduce their ability to think critically and independently. The finding of the study are expected that the results will have real world application for academic institutions, curriculum developers and teachers in integrating AI technologies into management education. This research also adds to the growing literature on the use of AI in higher education by providing real data from Navi Mumbai. It helps in understanding how AI use in colleges affects students' skill development in a real class room settings.

**Keywords:** Artificial Intelligence, AI Tool Usage, Analytical Skills, Management Students, Higher Education, Skill Development, Navi Mumbai.

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## Introduction:

With the fast growth of Artificial Intelligence (AI), its role in education system has expanded significantly. In the current scenario, AI tools are being used to create intelligent tutoring system, data analytics platforms, content creation tools and decision support applications that assist students in a number of disciplines, including management education. In recent years, AI-powered tools such as intelligent tutoring systems, data analytics platforms, content generators, and decision-support applications have become increasingly accessible to students. In management education, where analytical thinking and data-driven decision-making are vital competencies,

Analytical skills are essential for management students to understand how to interpret data, make decisions, solve problems and make strategic decisions. As companies increasingly depend on big data and digital analytics for decision making, the ability to analyse and interpret information has become a key employability skill. AI tools provide students with valuable automation and create content efficiently.

Analytical skills are fundamental for management students, as they enable individuals to interpret data, evaluate alternatives, solve complex problems, and make informed strategic decisions. With businesses increasingly relying on big data and digital analytics, the ability to analyse information effectively has become an essential employability skill. AI tools provide students with opportunities to engage with real-time data analysis, automate repetitive tasks, generate insights, and simulate business scenarios, potentially enhancing their analytical capabilities.

For management students, analytical skills are a core skill that allows individuals to understand data, assess alternatives, solve complex problems and make strategic decisions. As company continue to depend heavily on big data and digital analytics, the ability to analyse information has become a key skill for employment.AI tools provide students the opportunity to work with real-time data analysis, generate meaningful insights and model business scenarios that could enhance their analytical abilities. Although AI tools provide clear benefits such as saving time and quick access to information, there are some concerns about over-reliance on AI, reduced independent critical thinking and limit the development of critical reasoning skills. There is limited research based evidence to determine whether AI tools genuinely improve student's analytical abilities assist them in finishing tasks without encoring deep thinking and meaning understanding. Therefore, this study aims to examine the impact of Artificial Intelligence tool usage on analytical skill development among management students in Navi Mumbai, by offering research-based findings from a specific local context and presenting useful recommendations that can be applied to improve management education in practice.

**Literature Review:**

Recent research (2020–2025) highlights the transformative role of Artificial Intelligence (AI) in higher education, particularly in enhancing students' cognitive and analytical competencies. A bibliometric and content analysis published in *Discover Education* (2025) indicates a significant rise in empirical studies examining AI's influence on cognitive learning outcomes, suggesting a paradigm shift toward AI-supported academic development.

Several studies emphasize the impact of generative AI tools on higher-order thinking skills. Das Deep and Chen (2025) found that AI-assisted academic writing tools significantly influence students' writing proficiency and critical thinking, while also raising concerns regarding academic integrity. Similarly, Hassen (2025) reported that AI-supported learning environments positively affect reading comprehension, critical thinking, and problem-solving abilities among students.

Systematic reviews further validate these findings. Luo et al. (2025), in International Journal of Educational Technology in Higher Education, concluded that AI-based learning tools enhance analytical reasoning and adaptive learning processes when integrated effectively into curricula. Qu (2025) conducted a meta-analysis demonstrating that generative AI tools contribute significantly to higher levels of Bloom's taxonomy, particularly analysis and evaluation skills.

Empirical investigations into AI-powered assessment tools also reveal positive outcomes. Lee et al. (2025) showed that GenAI-powered systems improve higher-order thinking and analytical reflection. Similarly, Krause, Dalvi, and Zaidi (2025) highlighted the evolving role of lecturers in facilitating AI-supported skill development.

Research has also explored student's perceptions and motivations. Santos-Jaen et al. (2025) found that students perceive AI as beneficial for both academic and professional skill development. However, Mazaheriyan and Nourbakhsh (2025) cautioned against overreliance on AI, stressing ethical boundaries and responsible usage.

Studies focusing specifically on analytical and problem-solving skills confirm a positive association between AI usage and higher-order competencies. A 2025 study in Algorithms demonstrated that AI-assisted learning significantly improves analytical thinking and problem-solving performance. Similarly, Vieriu (2025) found measurable improvements in academic performance linked to AI technology integration.

Adoption-focused research also provides valuable insights. Zhao, An, and Liu (2025), using a PLS-SEM model, identified self-efficacy and multimodal literacy as significant predictors of AI tool adoption in higher education. Despite strong global evidence, most studies are conducted in international contexts, with limited localized empirical research focusing on management students in Indian metropolitan areas such as Navi Mumbai. Moreover, while many studies discuss cognitive and critical thinking outcomes broadly, fewer studies isolate analytical skill development as a distinct measurable construct.

Therefore, the present study builds upon recent empirical findings and attempts to provide localized, quantitative evidence examining the impact of AI tool usage on analytical skill development among management students in Navi Mumbai.

**Research Gap:**

While there is a growing body of literature on the expanding integration of AI tools in higher education and their potential to enhance learning outcomes, there are several gaps, as most recent studies focus broadly on AI adoption in education, digital learning efficiency. There is limited empirical research examining the impact of AI tool usage on analytical skill development among management students, many studies discuss The other major gap is in the contextual dimension, there are few localized empirical studies of educational ecosystems at the city level, especially in emerging educational hubs like Navi Mumbai. Therefore, this study seeks to address these gaps by examining the relationship between AI tool usage and analytical skill development among management students in Navi Mumbai using quantitative methods and regression analysis.

**Objectives of the Study:**

1. To examine the extent of Artificial Intelligence (AI) tool usage among management students in Navi Mumbai.
2. To measures the analytical skills among management students.
3. To examine the relationship between AI tool usage and analytical skill development.
4. To determine the impact of AI tool usage on analytical skill development.

**Hypotheses:**

**$H_1$:** There is a significant level of AI tool usage among management students in Navi Mumbai.

**$H_2$:** Management students demonstrate a significant level of analytical skills.

**$H_3$:** There is a significant relationship between AI tool usage and analytical skill development among management students in Navi Mumbai.

**$H_4$:** AI tool usage has a significant positive impact on analytical skill development.

**Research Methodology:**

The study adopts a quantitative and descriptive research design. The target population of the study consists of Management students enrolled in colleges located in Navi Mumbai. A sample size of approximately 180 students will be selected for the study.

The study will use a **convenience sampling method**, as respondents will be selected based on accessibility and willingness to participate. The study is based on **primary data** collected through a structured questionnaire.

**Data Analysis & Interpretation:**

**$H_1$:** There is a significant level of AI tool usage among management students in Navi Mumbai.

A one-sample t-test was conducted to examine whether AI tool usage among management students differs significantly from the neutral value of 3. The results showed that the mean score $M = 4.23$, $SD = 0.73$ was significantly higher than the test value $t = 22.65$, $p < 0.05$. This indicates a significantly high level of AI tool usage among management students in Navi Mumbai. Hence, $H_1$ is accepted.

**$H_2$:** Management students demonstrate a significant level of analytical skills.

The one-sample t-test revealed that the mean analytical skill score $M = 3.50$, $SD = 0.72$ was significantly higher than the neutral value of 3, $t(179) = 9.31$, $p < 0.05$. Since the p-value is less than to the 0.05 significance level, the result is statistically significant. Therefore, $H_2$ is accepted.

**$H_3$:** There is a significant positive relationship between AI tool usage and analytical skill development among management students in Navi Mumbai.

Pearson correlation analysis was conducted to examine the relationship between AI tool usage and analytical skill development among management students in Navi Mumbai. The results revealed a moderate positive correlation $r = 0.55$, $p < 0.05$. This indicates that higher levels of AI tool usage are associated with higher levels of analytical skill development. Furthermore, the coefficient of determination $R^2 = 0.30$ suggests that approximately 30% of the variation in analytical skills can be explained by AI tool usage. Therefore, $H_3$ is accepted.

**$H_4$:** AI tool usage has a significant positive impact on analytical skill development.

A simple linear regression analysis was conducted to examine the impact of AI tool usage on analytical skill development among management students in Navi Mumbai. The results indicated that AI tool usage significantly predicts analytical skill development $\beta = 0.55$, $p < 0.05$. The model explained approximately 30% of the variance in analytical skills $R^2 = 0.30$. This suggests that higher levels of AI tool usage lead to higher levels of analytical skill development. Therefore, $H_4$ is accepted.

**Findings:**

1. The study revealed that management students in Navi Mumbai use high level of AI tool usage. The mean score of AI usage $M = 4.23$, $SD = 0.73$ was significantly higher than the neutral value of 3 $t(179) = 22.65$, $p < 0.05$. This indicates that students make consistent use of AI tools for academic and learning purposes.
2. The results revealed that management students have a significantly high level of analytical skills. The mean analytical skill score $M = 3.50$, $SD = 0.72$ was significantly above the neutral value $t(179) = 9.31$, $p < 0.05$. This suggests that students display moderate to high analytical ability.

3. Pearson correlation analysis showed a moderate positive relationship between AI tool usage and analytical skill development $r = 0.55$, $p < 0.05$. The results indicates that students who use AI tools more frequently tend to have better analytical skills.
4. Regression analysis indicated that AI tool usage has a strong positive impact on analytical skill development $\beta = 0.55$, $R^2 = 0.30$, $p < 0.05$. The findings indicate that approximately 30% of the variation in analytical skills is explained by AI tool usage.

The study concludes that AI tool usage plays an important role in enhancing analytical skill development among management students in Navi Mumbai. Students who frequently use AI-based tools demonstrate higher analytical abilities compared to those with lower usage levels.

**Conclusions:**

A study was conducted to assess the influence of Artificial Intelligence (AI) tool use on analytical skill development among management students in Navi Mumbai.

The findings suggest that the students show high use of AI tool, which shows the integration of AI-based platforms in academic learning and that students show moderate to high analytical skills, which shows that students show high analytical skills. The findings suggest that students show a high level of AI tool usage, which shows the integration of AI-based platforms in academic learning and that management student's show moderate to high analytical skills. The correlation analysis revealed a moderate positive relationship between AI tool usage and analytical skill development and Regression analysis confirmed a significant positive relationship between AI tool usage and analytical skills, explaining approximately 30% of the variation, suggesting that AI tools contribute significantly to the development of analytical skills. Hence, we can conclude that AI tool usage significantly contributes to analytical skill development among management students in Navi Mumbai.

**Suggestions:**

1. Educational institutions should integrate AI-based tools into the curriculum to enhance analytical learning.
2. Faculty members should provide structured guidance on the effective and ethical use of AI tools.
3. Workshops and training sessions should be organized to improve students' AI literacy and analytical thinking skills.
4. Institutions should encourage students to use AI tools for data analysis, case studies and research projects.
5. Policies should be developed to ensure responsible and academic use of AI technologies.

**Limitations:**

1. The study was limited to management students in Navi Mumbai only.
2. The research relied on self-reported questionnaire data, which may involve response bias.
3. The study used a cross-sectional design, capturing data at one point in time.

**Future Scope:**

1. Further studies can include other cities and states for broader generalization.
2. Comparative studies can be conducted between undergraduate and postgraduate students.
3. Future studies may include additional variables such as digital literacy, academic performance, and critical thinking skills.

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