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Impact and acceptance of Artificial Intelligence-based Writing Assistant among the youth in Pakistan

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Abstract
Artificial intelligence (AI) has transformed society by revolutionizing human beings, from private to public sector, particularly the youth. The core purpose of the research is to examine the acceptance level of Artificial Intelligence (AI) among university students. At this academic level, youth especially students have a lot of issues in terms of writing their subject-relevant work. This research study explains the acceptance of Artificial Intelligence (AI) among the youth (15-29) for assistance with academic writing skills.
Aiming to produce result-oriented research, a qualitative approach (Netnography) has been used in this empirical study. A purposive sampling technique was adopted to select post-graduate students (n=100) from four universities (two Public and two Private). Data was collected through semi-structured interviews consisting of ten questions. For the purpose, a dedicated "WhatsApp group" has been generated to facilitate, interaction and interview administration.
The results of the research revealed an affirmative response, impact of AI-based writing assistance and acceptance among the youth of all private and public sector universities. The usage of Artificial Intelligence (AI) has doubled the competence by providing quick response with sinking time span and extra effort for editing and rephrasing.
The conclusion of the exploration will lead to accepting this human ease technology (AI). It will also give room to manage institutions and students in adopting AI writing assistants which will ultimately enhance their writing skills and process.
Keywords: Artificial Intelligence (AI), Youth, Writing-Assistance, Technology Acceptance, Netnography

1. Introduction

This era has witnessed an exceptional revolution in Information Technology (IT). Advance AI is speedily improving every sphere of the life, leading to the fast evaluation and replacement of obsolete technologies worldwide. Artificial Intelligence (AI) has become a cornerstone of modern technological innovation. Although it has been a subject of interest for decades, its practical applications have recently begun to suffuse mainstream business practices, offering significant improvements in efficiency and performance improvements across different sectors. (Skilton & Hosvepian, 2017)

The United Nations (UN) categorized; "youth" is a person or persons among the ages of 15-24 years. However, each nation has its own general description of the age limit. Bothe in Pakistan and India, the youth cohort is 15-29; while in Bangladesh it is 18-35. There is 1.2 billion youth in the world (PRB 2019). As revealed in Pakistan census, 67 percent of total population in 2023 was below the age of 30 (Youth) and 80 percent below 40. (Dawn.2024)

This study investigates the acceptance of AI-based technology among **university students** (hereafter referred to as **youth participants**) enrolled in selected public and private universities in Pakistan. Throughout this paper, terms such as **students**, **youth participants**, and **young learners** are used interchangeably to refer to the same target group. The data provides valuable insights into the perceptions and experiences of these participants.

Pakistan, with its majority of populace is youth continuously excelling, staying on a ledge of critical stage regarding education, employment, growth, empowerment and engagement. When talking about socio-economic development is concern the struggle of this leading youth is enormous. Significantly this valuable national resource comprising a large youth population and representing demographic dividend, can be transformed into extensive human capital pliant social development. By effectively channelizing their energy and capability, this demographic can contribute to sustained, grassroots socio-economic escalation, ultimately nurture the development of Pakistan. (Barber, 2010)

However, it has not yet been empirically established to what extent university student's ability influenced by AI-based writing tools. Therefore, a deep exploration is essential to grasp the impending advantages and disadvantages of these AI technologies in the context of youth and its scholarly writing talent. The massive use of this advance technology in higher education and the rising need for effective writing among youth and their assistance make this evaluation necessary. In scholarly endeavors including research papers, grant applications, researcher and conference presentations, academic writing is essential. Enhancing the writing abilities of university academics benefits their professional development as well as the caliber of their intellectual work and the institution's over all reputation.

2. Literature Review

These technological reforms are reshaping human cognition from a learning perspective actively provoking youth for define their learning goals by accepting the advancement of the modern age. Technology-driven innovations particularly in knowledge acquisition enable more precise and efficient learning process. It encourages more scientific, systematic approach linked to Artificial Intelligence (AI). Gadgets and related applications have accelerated intellectual development now widely in use across various fields, most prominently in education sectors. (Aslam, 2023)

2.1 Cognitive Computing & Deep Learning

In terms of AI level of construction and meta- cognition is hundred percent perfect and faster than a simple human intelligence. Enhance his working ability which surpasses general potential of any entity. The

technology is initiated by individual intelligence for his effortlessness, comfort in usual tasks and challenges, in various kinds of fields including agriculture, business, and accountancy. The entire plan been developed with concern of sharp response via cognitive capabilities of machine. (Roll, 2016)

According to Roll (2016), provides a theoretical basis for considerate how student interact with automated feedback systems, emphasizing that user commitment is shaped by perceptions of system usefulness, ease of communication, and trust in response. All these dimensions closely align with the core constructs of the Technology Acceptance Model (TAM) which is particularly perceived convenience and ease of use. In the context of AI-based writing assistants, this suggests that students are more likely to accept such gadgets whenever they find the feedback, easy to interpret with reliability. Therefore, Roll (2016) supports the application of TAM in examining students' acceptance and usage behavior of AI writing technologies.

Obviously the processor is greatest and defined programming to understand the commands of human-being. Genuinely it is a multi tasking machine in real time application consequently designed in such way to perform numerous maneuvers in single touch which is difficult for human and impossible to meet this advancement in implementation of function (Kornienko et al, 2015).

It has transformed many feature of our life particularly the writing engineering is no exception. Educational script abilities of youth at higher institution have had notably affected and accepted by the growth of (AI). This achievement has been driven by AI including writing skills including spelling, grammar check, research development or plagiarism detectors (Mohamed, 2023).

Across all aspects of human lives including academic activities of youth, Artificial Intelligence (AI) based writing assistants have evolved into important device. It gives them quick response for research work, cutting-edge to find and fix grammar and spelling mistakes with less effort before ever. (Khabib, 2022).

The people especially students who are close to writing work in the universities eager to learn the advance features of this human ease tool with its all accessibilities. Recent and advance gadgets, which considerably near to the human intelligence have terribly changed the lives of individuals, engaged in academic writing. The youth and many others shifted work from casual to specific in highly manageable way. (Ray, 2023)

All latest applications and software's formulated under AI technologies, like robots and adaptive learning systems been widely accepted. These tools actively in use by both instructors and apprentices of post-graduate and university level students. This technology provides chance for the understanding of modified learning for beginners to meet their individual needs (Della Ventura, 2017)

Commonly the higher educational institutions across the globe get mastered and consumed the AI linked websites and applications for their own practice, teaching and learning through available access of mega webs. More over higher education institutes provide rigorous access of AI services in students, teacher learning activities, formulation of curriculum, evaluation, research, development and may other fields. This open access has made easy for universities and educational institutions to present specialized guidance and skills development for the faculty and students through accurate exercise of AI. (Chen, 2020).

2.2 Students Engagement through Artificial Intelligence AI

In this modern era, AI learning is essential for educated youth because the scope of education becomes more widen and extended globally. AI introduced innovative applications and apparatus through providing the trouble-free and true sources of learning. More or less, these tools are in use of apprentice and teachers especially in research and of development areas. Through work on the computer based skill, student access, competency and presentation of an individual in meantime. The growing accessibility in the modern tutoring and educational organizations offered a series of "AIED" facilities for instructor, scholars to bring up to date

coaching. Learning process likewise access of network, SPSS, plagiarism checker (Turnitin) dictation app to record the information and convert it into meaningful context (Hussain, et al., 2022).

"AIED" has formulated the analytical assessment application which determined the breach and complexity in individual performance that come through this technology. In addition, it provides enormous sources of learning and information for teachers and students through obtainable web apps to resolve their studious and experiential problems. (Imran & Akhtar, 2023).

AI based educational software introduce the learning population and mutual learning approach specifically young learners and instructor who ask questions, share their feedback about issue. It's also gives consultancy services for students if they feel any kinds of complexity through virtual accessibility of experts and scholars. The technology has reduced the gap between the information provider and the receiver as per the human ease. (Amjad et al., 2023).

2.3 Significance

The study revealed youth of universities has warmly accepted because the usage of computer technology based software are very much familiar among them. The youth which were facing issues relevant to the writing activities been solved by the AI generated human ease tools and gadgets. The trends towards AI-based writing assistants among such pupils excelling gradually and its usage of comfort made it more common within no time.

The recognition of its potential to boost research work, teaching, and mentoring processes mentioned that AI and its relevant tools can be valuable resource in academic settings. The preference for AI-based writing assistants for ensuring error-free content of students and teachers adhering and improve the excellence, accuracy of academic written and research work.

2.4 Objectives:

- To explore the acceptance and impact of AI (artificial intelligence) assistant on academic writing skills among youth.
- To identify the existing challenges relevant to the AI-based writing assistant among its current users.
- To propose actions for making it more beneficial to those who are not much familiar about this tool of human comfort.

2.5 Research Questions

- How do *perceived helpfulness* and *ease of use* influences the acceptance of AI-based writing assistants among youth?
- How does the *perceived usefulness* of Artificial Intelligence based writing assistants affect students' writing performance?
- Which specific aspects of academic writing are distinguished by students as improved through the use of AI-based writing assistants?
- What challenges and barriers influence youths' *attitudes* and *behavioral intentions* toward the use of AI-based technologies in public and private universities in Pakistan?

The entire research questions are based on the Technology Acceptance Model (TAM), which emphasis on perceived usefulness, ease of use, attitudes, and behavioral intentions as key determinants of technology adoption. RQ1 examines the role of perceived usefulness, ease of use in shaping acceptance of AI-based writing assistants. RQ2 and RQ3 focus on perceived usefulness by exploring how users (Youth) assess the impact of AI tools on writing performance and precise skill development. RQ4 addresses external obstruction

and challenges that influence attitudes and behavioral intentions toward AI adoption in educational contexts. So, all these research questions are theoretically aligned with TAM constructs.

3. Theoretical Framework

3.1 Technology Acceptance Model (TAM)

The previous studies demonstrated that perceptions of *convenience* and *ease of use* notably influence attitudes toward AI tools and intent to continuous use (Lai & Zheng, 2023; Dwivedi et al., 2023). The research on **youth digital practices** also highlights that how young users aggressively explore AI tools to improve writing quality, self-expression, and response processes, often blending human and machine support (Almatrafi & Johri, 2022; Chiu & Hew, 2024).

After launching of comparatively strong language models on internet, made easy to learn AI features to produce standard language text. It produced new opportunities for AI-assisted writing, allowing these language model tools to make draft content and ideas for them to write their own articles and essays (Raiaan, 2024).

The core interest of research studies swing from understanding the potential of AI technology to the diverse perspectives of usage in education, including AI-based digital writing assistants for teachers (Khabib, 2022) and its role as a writing assistant (Imran & Almusharraf, 2023).

These generated contexts by the technological models turn into more fluent, coherent, and suitable. This AI technology has revealed the writing potential of students, teachers, and writers as well; facilitated language learning. It's because of improve collaboration and open-ended workflows, as well as stimulate idea generation and brainstorming of humen (Katar et al., 2023).

The Technology Acceptance Model (TAM) is most often used to investigate the acceptability of communication technology. This model also employs to predict and detect the adoption of news, to investigate the motivation of university students and teachers. (Han et al., 2023) Therefore, it is ingrained that the model (TAM) can be used to make it clear, how users accept technology. This model also reveals the relationship among perceived ease of use (PEU), perceived usefulness (PU), and purpose to use technology. (Yang et al., 2023)

In a similar manner, students might find a new technology which is simple to use but not very helpful. It was perceived through multiple studies that a significant factor in encouraging the usage of a particular technology (Wu and Wang,.2005)

As affirmed that artificial intelligence (AI) is new and its use in education is an innovative application of its capabilities in a fresh, important, and rapidly expanding field. It gives effortlessness for the students and teachers to complete their assignments engagingly. (Baharun and Haslinda., 2022)

All these research works indicate that young student's engagement with AI technologies is formed by contextual factors such as trust, digital literacy, and ethical responsiveness. While earlier work (e.g., Roll, 2016) provided a foundation for understanding learner interactions with automated feedback systems. Most recent studies strain on the importance of reinterpreting Technology Acceptance Model (TAM) constructs in the era of generative AI, where writing support involves co-creation rather than simple tool use.

As per findings of Roll (2016) further indicates that effective interaction with automated feedback systems enhances learners' capability to revise and develop their work. This is directly relevant to the present study, where AI-based writing assistants are anticipated to improve specific aspects of academic writing such as language accuracy, correction of error, and consistency. The study draws on TAM to look at how Pakistani youth recognize the value and easiness use of AI writing assistants, how these discernments develop their

attitudes, and how such attitudes influence intentions toward ongoing adoption. Thus, the research work provides empirical support for examining the relationship between AI usage and improvement in writing skills among university students.

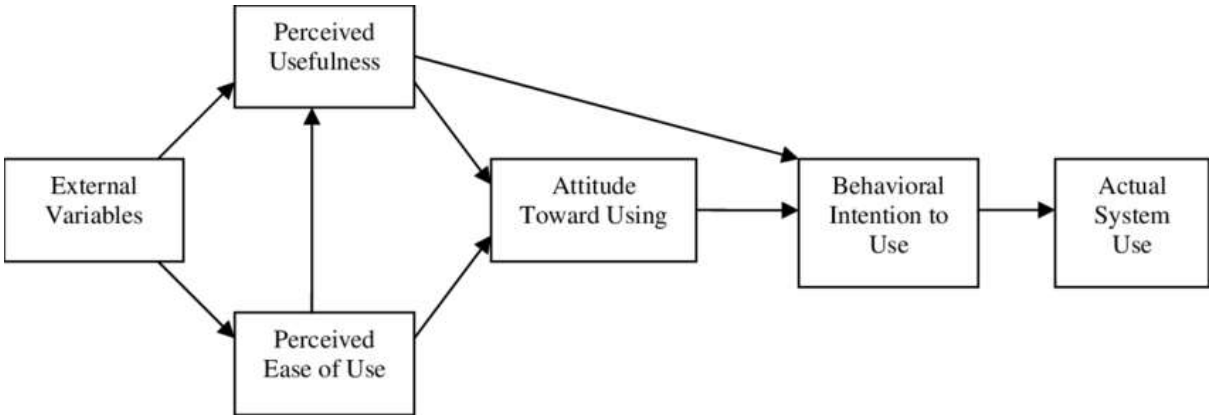

Diagram of the Technology Acceptance Model (TAM) ***Adapted from Davis (1989)***

4. Methods

4.1 Research Design

This research work employed a netnographic qualitative design, to examine youth engagement with AI-based writing assistants within genuine digital environments. (Kozinets, 2020) "Netnography" was chosen because it enables in detail observation and understanding of online connections, user experiences, and meaning-making practices within naturalistic settings which is an approach particularly suited to studying technologically mediated writing behaviors.

Participants and Recruitment

Participants were recruited through purposive sampling via university networks and social media groups of young students, professionals aged 18 to 30. A total of 18 participants (10 female, 8 male) consented to be a part of the work after receiving detailed information about the study's aims, voluntary nature, and data confidentiality. Official and ethical approval was obtained from the host institutions, and participants provided written informed consent before each interview.

Collection of Data

Data was collected through semi-structured online interviews (20–30 minutes each), conducted via Zoom or WhatsApp as per participant preference. The interview guide was designed focusing on the four TAM dimensions, perceived usefulness, perceived ease of use, attitude toward use, and behavioral intention also encouraging participants to reflect on their everyday digital writing practice as well. The entire work was captured in audio format, transcribed verbatim and securitized using thematic analysis (Braun & Clarke, 2021).

Data Analysis

An initial round of open coding was followed by axial coding line up with TAM constructs, enabling both inductive and theory-driven interpretation. Aiming to enhance trustworthiness, two researchers reviewed the codes and themes independently, discussing discrepancies until consensus was reached. The software

"NVivo" was used for data management and coding. The resulting themes incarcerate participants' experiences of AI-assisted writing, challenges, perceived benefits, and ethical considerations.
The resulting themes captured participants' experiences with AI-assisted writing, highlighting key challenges, perceived benefits, and principled considerations related via AI-based writing assistants among Pakistani youth.

4.2 Qualitative Research Method

Every research must have a clear, managed, methodical (intended, planned, and communal) approach to dugout for most proper results. The method as an inductive approach of nature the scholar normally explores, connotation and imminent in a given circumstances (Strauss & Corbin, 2008; Levitt et al., 2017).
Qualitative method of research recommends working on massive variety of data collection along with analyzing techniques that usually apply for purposive sampling and semi-structured, open-ended interviews (Dudwick et al., 2006; Gopaldas, 2016).
This specific category of social sciences research in which the researcher brings together data and work with non-numerical information to clarify the significance, help to identify with social life from first to last study of targeted audience or places (Punch, 2013).
The method of research allows the researcher to investigate confined information and understanding of a prescribed identity, program, population, familiarity, and meanings with social relations and cultural processes with relative aspects that marginalize a population. To some extent it is fewer planned in description, because it formulates and construct new theories (Leedy & Ormrod, 2001).
It's a type of social action, emphasis on the way of people interpretation make sense from their experiences to recognize the social reality of folks. This can be done through the techniques of discussion, diary, periodical, classroom explanation and immersions; open-ended questionnaires to get analyzed and interpret the content of data analysis in any shape like illustrative written materials, and verbal narration (Zohrabi, 2013).

Data Sources in "Netnography"

Considerably, it contains video, graphical, and photographic information to archive data, "netnography" employs solicited data, in shape of asynchronous communication among the researcher and the participants (e.g., postings to the researcher's study forum, email exchanges among the study and participants, as well as feedback to a post on a website developed by the researcher). The researcher can collect interviews, in which the "netnographer" use asynchronous CMC tools (e.g., What's app) (Kozinets, 2010). Modern technological advancement, the human interests have been swing towards the online learning and integrate their views virtually. These inspirational trends of social connectivity stimulated the researcher for working on virtual data collecting technique.

4.3 Sampling and Data collection

Aiming to collect the research relevant data the researcher has adopted asynchronous technique as a tool, by using what's app, semi structured interview schedule had been shared with the respondents.
The expedient sampling technique in use to select the sample from 4 different universities, (University of the Punjab, Government College University Faisalabad, Lahore Garrison University and University of Management & Technology) two private and two public sector universities.
The sample was consist of 100 students considerably youth of age between15-29 were enrolled in these universities. A group of 25 students from the department of Mass Communication was selected from each university.

Delimitations

The research study was surrounded four universities (2 Public and 2 Private) while the department of Mass Communication was specifically selected for interviews.

Thematic Analysis:

It has been evaluated by using thematic analysis procedure. The analysis was carried out through dividing it into the six phases in which phase-1 was getting adapted with data, phase-2 for generating codes, which is little more tricky, phase-3 was for searching themes after that in next stage 4 reviewing, phase-5 naming and phase-6 was for reporting the themes.

Reporting of Data

Table 1 AI-based writing assistants impacted overall writing skills of Youth

Code	Theme	Sub-Themes	Description
C1	AI Acceptance and Awareness	Perceived usefulness, ease of use, accessibility	University students reveal a high level of awareness and acceptance of AI tools, mostly driven by their perceived usefulness and user-friendly interfaces.
C2	Improvement of Academic Writing Skills	Grammar enhancement, vocabulary enrichment, coherence, structure	Students report significant improvement in writing eminence, particularly in grammar, sentence structure, and logical organization of ideas.
C3	Efficiency and Productivity	Time-saving, quick content generation, task automation	AI tools enable students to complete academic tasks more efficiently, saving time and increasing overall productivity.
C4	Learning Support and Skill Development	Research assistance, Idea generation paraphrasing, editing	AI assists students in bright ideas, refining arguments, and improving drafts, contributing to enhanced learning experiences.
C5	Critical Engagement with AI	Selective use, verification of outputs, human-AI collaboration	A few students actively evaluate AI-generated content, demonstrating critical engagement and responsible usage practices.
C6	**Challenges in AI Adoption**	Over-reliance, reduced critical thinking, accuracy issues, ethical concerns, plagiarism risk	Despite benefits, students express concerns about dependency on AI, potential decline in independent thinking, and ethical issues such as plagiarism and misuse.
C7	Institutional and Contextual Barriers	Lack of policy, limited guidance, unequal access, digital divide	The absence of clear institutional policies and unequal access to technology create barriers to effective and ethical AI integration.

The thematic findings of this research study demonstrate a well-built alignment with the Technology Acceptance Model (TAM), providing empirical support for its applicability in the context of AI-based writing tools in university education. Themes likewise AI acceptance, efficiency, and learning support clearly reflect the constructs of perceived usefulness and perceived ease of use are central to TAM. The research findings indicate that when university students perceive AI tools as beneficial for enhancing writing quality, time saving, and improving academic productivity, they are more likely to develop positive attitudes toward their use of it. These constructive attitudes, in turn, influence their behavioral intentions to adopt and continuously engage with AI technologies in their academic practices.

Simultaneously, the emergence of challenges, including over-reliance on AI, concerns about accuracy, and ethical issues such as plagiarism, along with broader institutional barriers like lack of formal guidelines and imbalanced access to technology, underscores the importance of external variables in shaping technology

acceptance. All these factors may restrain or even constrain the adoption process, suggesting that acceptance is not solely determined by perceived usefulness and ease of use, but also by contextual and structural conditions. Therefore, the addition of thematic findings with TAM offers a more comprehensive and nuanced understanding of how university students interact with AI-based systems, highlighting both enabling factors and potential limitations within the adoption process."

5. Results and Discussion

5.1 Thematic Analysis

Artificial Intelligence (AI) corridor of information & knowledge

The contributor figured out; AI is enough, valid resource of acquaintance and information with machine learning. It proffers appropriate knowledge, comprehension, allied books and magazine. It extends the cognitive energy in learner to determine issues and crisis of life and career development. Articles, books and reports related to AI reflect a gigantic reserve of information about various rules of learning such as medicines and bio science, agriculture and livestock, business and commerce and art and calligraphy. It's build up extracts related material about the problem from the speckled wealth of information.

AI assistance in learning complexities

The participants of the study convinced on a point that AI is faster and easy to learn for its users which help in resolving issue and complexities in teaching or learning. This gadget gave the full authority to learn the advance techniques of writing particularity in research and progress. AI makes available the most excellent, suitable solutions for any crisis relevant to the writing in a manageable way and tries to remedy the learner. The young learners who have opted and practicing this advance technology have supposed that AI gadgets authorize the students through enhancing the learning practice. It motivates and provokes its learner to be engagement with computer oriented instructions which is fairly supportive to accomplish the requirement of learners as well.

Artificial Intelligence (AI) Effective for Quality of Work

It has been also observed the research scholar after collecting the data for its selective group of juveniles. This technology makes possible, individual learner and institution via expedient material, audio-video, graphical designs and diagrams usually been by the students and research scholars as well. "ChatGPT, Bingo, Youchat, Wizard, Lena etc" provide a vital access to the users who ask quires related questions to any disciple of life of any social circle. They believe that the technology has enhanced the competence and effectiveness of their work. It focuses the excellence of work performance with faster and perfect pace which is drily needed of this speedy working era.

6. Conclusion

It was revealed in this research study that the acceptance level of AI (Artificial intelligence) tools and technology exceptional among the youth of university stage students. The respondents of the research has substantiated that the AI refer gadgets gave them a complete sense of ease in terms of improved writing skills. The technology has reduced the time span of writing, with increase of language accuracy and with the simplicity of inconvenience from the writing work which was not trouble-free than ever before.

Mentioning their reservations which still exists but can be resolved with passage of time that inadequate understanding among their fellows, who are least, contacted to work and use the latest technologies. Fewer communicative scenarios and the split mod of discussion is a core obstacle for maximizing the range of the users.

Some other suggestions came from the research that specific IT training is another dilemma which resists growing and accepting the technological use among the foremost community of Pakistan. Majority of the young individuals, using the AI tools has learnt the skill from their own style of wisdom while there must be some teaching session specially infusing the hidden techniques of the Artificial Intelligence (AI) among them. This information technology assistance will grasp the concentration of the pupils which lead to excel in its use.

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