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THE IMPACT OFGENERATIVE ARTIFICIAL INTELLIGENCE TOOLS ON STUDENT ACADEMIC PERFORMANCE: STRUCTURAL EQUATION MODELING (SEM) APPROACH.

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Abstract

The swift development of Generative Artificial Intelligence (GenAI) capabilities (hereafter called GenAI tools) is transforming several aspects of education have generated serious concerns on their possible effects on student academic performance. Such GenAI tools include Text Generative Artificial Intelligence (Text GenAI), Code Generative Artificial Intelligence (Code GenAI) and large language models (LLMs). Previous studies on GenAI in higher educational settings have focused on six streams of research: (1) the integration and transformative roles of GenAI tools like ChatGPT in high education institutions (HEIs),(2) the implications and potential of GenAI code generation tools in programming education,(3) the integration, exploration and utilization of GenAI tools for programming education, (4) ethical considerations and pedagogical approaches in GenAI education, (5) students' attitude, acceptance and use of GenAI technologies in higher education and lastly (6) the impacts of GenAI in high education. However, none of the studies within the aforementioned six thematic streams of research have focused on the impact of GenAI on students' academic performance nor the variables that could mediate on the direct relationship between GenAI and student's academic performance in the Nigerian universities examined. Thus, this study investigated the impact of GenAI on student's academic performance as the dependent variable. It also investigated the perceived concerns, willingness to use and knowledge use of GenAI as the variables that could mediate between the direct impact of GenAI on students' academic performance. The importance of understanding these mediating variables is because they explain the process or mechanism through which the GenAI tools affects student's academic performance as the dependent variable. A conceptual framework was developed from the literature review in the light of stimulus-organism-response (SOR) theory in order to investigate the phenomenon – GenAI impact on student academic performance among American University of Nigeria (AUN), Modibbo Adama University (MAU) Yola, Nile University Abuja and Baze University Abuja students in Nigeria. A quantitative survey methodology was used where online questionnaires that deem fit to reach out to the targeted population of 300 students were harvested through purposeful sampling technique. The data were analyzed with structured equation modelling (SEM) software called Smart PLS version 4.0. The results showed that there is a significant effect of GenAI on student's academic performance in the Nigerian universities so far examined, where Text GenAI, and Code GenAI were discovered as the mostly used among the students. Willingness to use GenAI, students perceive concern, and their knowledge of GenAI played key roles in mediating the relationship between GenAI tools and student's academic performance among Nigerian student in HEIs. The study contributes to theory by developing a model that could identify the mediating variables between GenAI and student's academic performance. It could also inform teachers and policy makers that indeed the use of GenAI tools influence student academic performance in a positive way despite the current negative perceptions among teachers and policy makers, especially when mediated by students' willingness to use GenAI, their perceive concern, and knowledge of use of GenAI in a significant manner in their academic pursuits in Nigeria.