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**THE ACCEPTANCE OF AI TOOLS AND THEIR IMPACT ON
STUDENTS' ACADEMIC PRODUCTIVITY AND RESEARCH
IN IRAQI UNIVERSITIES**



**SCHOOL OF COMPUTING
UUM COLLEGE OF ARTS AND SCIENCES
UNIVERSITI UTARA MALAYSIA**

2026



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Abstract (English version)

This study investigates the determinants of university students' acceptance and actual use of Artificial Intelligence (AI) tools in Iraqi higher education and examines their implications for academic productivity and research activities within an extended Technology Acceptance Model (TAM) framework. Specifically, the study analyses the effects of Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Trust (TR), and Perceived Actual Cost (AC) on students' Attitude toward AI tools (ATT) and their Actual Use (AU). A quantitative cross-sectional research design was employed, and data were collected through a structured questionnaire administered to 257 undergraduate and postgraduate students from public and private universities in Iraq. The data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) in SmartPLS 4 to assess the reliability and validity of the measurement model, as well as the direct, mediating, and predictive relationships among the study constructs, including the application of Importance–Performance Map Analysis (IPMA). The findings reveal that Perceived Usefulness and Trust are the strongest predictors of students' Attitude toward AI tools, with Attitude emerging as the primary determinant of Actual Use, while Perceived Ease of Use exerts a positive but comparatively weaker effect and Perceived Actual Cost demonstrates a negative influence on both Attitude and Actual Use. The study contributes theoretically by validating the applicability of an extended TAM framework in a developing-country context and practically by providing evidence-based insights for policymakers and higher education institutions to support the ethical, accessible, and sustainable integration of AI tools in Iraqi universities.

Abstrak (Malay version)

Kajian ini menyelidiki penentu penerimaan dan penggunaan sebenar alat Kecerdasan Buatan (Artificial Intelligence, AI) dalam kalangan pelajar universiti di pendidikan tinggi Iraq serta implikasinya terhadap produktiviti akademik dan aktiviti penyelidikan berdasarkan kerangka Technology Acceptance Model (TAM) yang diperluas. Secara khusus, kajian ini menganalisis kesan Persepsi Kebergunaan (Perceived Usefulness, PU), Persepsi Kemudahan Penggunaan (Perceived Ease of Use, PEOU), Kepercayaan (Trust, TR), dan Persepsi Kos Sebenar (Perceived Actual Cost, AC) terhadap Sikap pelajar terhadap alat AI (Attitude toward AI tools, ATT) dan Penggunaan Sebenar (Actual Use, AU). Reka bentuk kajian keratan rentas kuantitatif digunakan, dan data dikumpulkan melalui soal selidik berstruktur yang ditadbir kepada 257 pelajar prasiswazah dan pascasiswazah dari universiti awam dan swasta di Iraq. Data dianalisis menggunakan Partial Least Squares Structural Equation Modelling (PLS-SEM) dalam SmartPLS 4 bagi menilai kebolehpercayaan dan kesahan model pengukuran, serta hubungan langsung, perantaraan dan ramalan antara konstruk kajian, termasuk pelaksanaan Importance-Performance Map Analysis (IPMA). Dapatan kajian menunjukkan bahawa Persepsi Kebergunaan dan Kepercayaan merupakan peramal terkuat terhadap Sikap pelajar terhadap alat AI, dengan Sikap muncul sebagai penentu utama Penggunaan Sebenar, manakala Persepsi Kemudahan Penggunaan menunjukkan kesan positif tetapi lebih lemah secara perbandingan dan Persepsi Kos Sebenar memberikan pengaruh negatif terhadap kedua-dua Sikap dan Penggunaan Sebenar. Kajian ini menyumbang secara teoritikal dengan mengesahkan kebolehgunaan kerangka TAM yang diperluas dalam konteks negara membangun dan secara praktikal dengan menyediakan pandangan berasaskan bukti kepada pembuat dasar dan institusi pendidikan tinggi bagi menyokong integrasi alat AI yang beretika, boleh diakses dan mampan di universiti-universiti Iraq.

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List of Abbreviations

Abbreviation	Full Term
AI	Artificial Intelligence
TAM	Technology Acceptance Model
PLS-SEM	Partial Least Squares Structural Equation Modelling
PU	Perceived Usefulness
PEOU	Perceived Ease of Use
CR	Composite Reliability
AVE	Average Variance Extracted
HTMT	Heterotrait-Monotrait Ratio
R ²	Coefficient of Determination
VIF	Variance Inflation Factor
IPMA	Importance-Performance Map Analysis

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Recently, there has been an increasing proliferation of Artificial Intelligence for Higher Education and Learning Technologies have become a fundamental resource in order to sustain the educational services and research. AI-based solutions encompass the capacity for systems to perform data-driven analysis, application of machine learning and natural language techniques to offer tailored academic experiences, facilitate educational decisions-making and automate intricate research processes (Zhou, Zhang & Chan, 2024; Almogren, 2023). For instance intelligent tutoring systems and automatic assessment tools offer prompt feedback that would otherwise make it easier for the learners to build up their skills and optimise time (Ivanović et al., 2022).

AI tools are also becoming very important in the academic context due to the capability they offer to students and researchers in freeing them from burdensome tasks such as reviewing literature, generating and relating ideas and analysing huge data sets, thus enhancing their productivity (Rathakrishnan et al., 2024; Bond, et al. 2020). In addition, we see that in some studies the use of these technologies is related to higher academic results, increased retention and improved digital skills among students (Kelly et al., 2023). This study takes students' Actual Use of AI tools as the primary observable behavioral outcome where Academic productivity and Research Performance are presumed to be possible outcomes of increased use of AI, rather than separate constructs.

However, the potential of AI technologies in education becomes a reality only when there will be factors that enhance students' willingness to accept it including perceived ease of use, perceived usefulness and trust regarding its accuracy and safety factor as well as economic cost (Abulaili et al., 2025). Belief that AI tools are costly or lack of trust on them

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