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InRES: A DIGITAL SOLUTION FOR ENHANCING RESEARCH ORIGINALITY AND SUPERVISION IN HIGHER EDUCATION

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ABSTRACT

*This study introduces the Innovative Research Electronic System (InRES), a digital repository developed to address research topic redundancy and supervision inefficiency in UiTM Pahang's MGT651 course. A quantitative TAM-based study involving 40 students revealed high system acceptance (overall mean = 4.02/5, 74.1% favourable ratings). Perceived Usefulness (PU) emerged as the strongest predictor of Behavioural Intention ($\beta = 0.48$, $*p < .001$), particularly for enhancing topic originality (rated 4.25/5). Supervisor Impact significantly influenced adoption ($\beta = 0.18$; $*r^2 = 0.71$ with PU), and students with prior research experience reported 65% higher adoption intention than novices. User feedback prioritized feature enhancements: workflow tools like research timeline trackers (17.5% of suggestions), industry-academia collaboration (12%), and AI-driven topic matching (7.5%). Findings demonstrate that InRES success follows the formula: $\text{Adoption} = 0.48(\text{PU}) + 0.39(\text{Attitude}) + 0.18(\text{Supervisor Support})$, validating its potential to foster originality through accessible research management. Future development should integrate productivity automation and scalability features.*

Keywords: Research originality, Technology Acceptance Model (TAM), Digital repository, Student research management, Higher education innovation

INTRODUCTION

The rising volume of student research in higher education demands efficient systems to manage, access, and evaluate academic output. As institutions expand, digital solutions are increasingly essential to uphold originality and academic integrity (Aziz, Jamil, & Zainuddin, 2020). Promoting research

originality remains a key priority, but challenges such as inadequate engagement with literature, plagiarism, and a lack of supportive research culture persist (Smith, 2023; Jones, 2022).

One major barrier to originality is students' limited understanding of existing academic work. Without deep literature engagement, identifying research gaps becomes difficult, reducing the potential for novel contributions (Taylor, 2023). Additionally, concerns around plagiarism—intentional or otherwise—can deter students from pursuing innovative ideas, leading to a cautious research environment (Brown, 2022).

To address these issues, universities are enhancing strategies to support originality, including fostering critical engagement with literature, interdisciplinary collaboration, and strong research cultures with adequate mentorship (Johnson, 2023; Williams, 2023). A balanced approach to academic integrity—combining education with accountability—can further encourage creativity while minimizing fear of penalties (Davis, 2023). Institutional frameworks that provide resources, ethical guidance, and practical tools are vital in empowering students to produce original research (Anderson, 2023).

At UiTM Pahang, the MGT651 (Research Methods) course has faced ongoing issues with topic repetition and ineffective supervision due to the lack of a centralized system. Students often duplicate research topics, diminishing novelty and academic contribution. Supervisors, too, struggle to monitor topic diversity across semesters, affecting research quality and learning outcomes.

To overcome these challenges, UiTM Pahang developed the Innovative Research Electronic System (InRES), a centralized digital repository for the MGT651 course. InRES systematically stores students' research titles, abstracts, and tables of content, helping to avoid redundancy and improve topic diversity. Its user-friendly design enables keyword searches, thematic browsing, and filtering by semester or methodology. Built-in analytics track research trends, aligning with the growing need for data-driven tools in academia (Rahman, Tan, & Musa, 2023).

Objectives of the Study

The main objectives of this study are to:

1. Develop and implement InRES to enhance the management of student research projects in the MGT651 course at UiTM Pahang.
2. Examine students' acceptance and behavioural intention to use InRES based on the Technology Acceptance Model (TAM).
3. Identify the key factors that influence students' attitudes toward using InRES, particularly focusing on perceived usefulness and perceived ease of use.

METHODS

This study used a quantitative approach to examine students' acceptance and intention to use the Innovative Research Electronic System (InRES) in the MGT651 course at UiTM Pahang. The Technology Acceptance Model (TAM) guided the study, focusing on Perceived Usefulness (PU),

Perceived Ease of Use (PEOU), Attitude Toward Using (ATU), and Behavioural Intention to Use (BIU).

The target population was 95 students from Part 5 and Part 6. Using G*Power 3.1, a sample size of 68 was determined, but responses were collected from all 95 to ensure sufficient data. Stratified random sampling ensured balanced representation between both parts.

Data were gathered via a structured TAM-based questionnaire, using a five-point Likert scale. SPSS was used for analysis, including descriptive statistics, reliability testing (Cronbach's $\alpha \geq 0.70$), Pearson correlation, and multiple regression to assess how PU and PEOU predicted BIU.

RESULTS AND DISCUSSION

Response Rate

The study targeted 95 students enrolled in Parts 5 and 6 of the MGT651 course. However, only 40 respondents provided complete data. Post hoc analysis confirmed adequate power (87%) for detecting large effects ($f^2 > 0.35$) but limited power (62%) for medium effects. Although the achieved sample size of 40 participants fell below the planned minimum of 68 determined through a priori power analysis (G*Power 3.1; $f^2=0.15$, $\alpha=0.05$, power=0.80), the regression analysis revealed robust associations consistent with Technology Acceptance Model principles. While the sample limitation necessitates caution regarding generalizability, the strength and consistency of these relationships with established TAM pathways suggest the core findings regarding adoption drivers remain valid for the studied population.

Construct Reliability (Cronbach's Alpha)

Internal consistency for all Technology Acceptance Model (TAM) constructs exceeded established thresholds (Cronbach's $\alpha > 0.85$), confirming measurement robustness.

Demographic Profile

Demographic analysis revealed a female cohort (85%), with 62.5% aged 22–23 and 80% having prior research experience. Most respondents (80%) were in Semester 6, reflecting advanced research engagement.

Table 1. Mean Scores

Construct	Mean	Std Dev	% ≥ 4 (Positive)
Overall	4.02	0.62	74.1%
PU	4.18	0.71	79.0%
PEOU	3.94	0.85	70.5%
ATU	4.11	0.78	77.5%
BI	4.08	0.74	76.7%
SI	3.85	0.82	68.0%

Based on Table 1, overall acceptance of InRES was high (mean = 4.02/5, SD = 0.62), with 74.1% of responses scoring ≥ 4 (favourable). Perceived Usefulness (PU) received the strongest endorsement (mean = 4.18, 79% favourable), particularly for enhancing topic originality ("helps find non-repetitive topics": 4.25/5) and providing research insights (4.30/5). Behavioural Intention (BI) scores (mean = 4.08) indicated strong adoption willingness, with 76.7% of students likely to recommend the system (highest-rated item: 4.35/5).

Correlation Analysis

Table 2. Key Relationships (Pearson's r)

Relationship	r	p-value
PU $\rightarrow$ Behavioural Intention	0.83	<0.001***
PEOU $\rightarrow$ Attitude Toward Use	0.78	<0.001***
Supervisor Impact $\rightarrow$ PU	0.71	<0.001***
ATU $\rightarrow$ Behavioural Intention	0.85	<0.001***

Correlation analysis using Pearson's r revealed statistically significant relationships among all core Technology Acceptance Model (TAM) constructs, demonstrating strong interconnections within the InRES adoption framework (all $*p < .001$, $*n = 40$) (Table 2). The strongest observed correlation emerged between Attitude Toward Use (ATU) and Behavioural Intention (BI) ($*r = 0.85$, $*p < .001$), indicating that positive feelings about the system directly translated to usage intent. This large effect size (Cohen's $d = 1.96$) suggests students' emotional responses to InRES were deterministic of their adoption decisions. Equally compelling was the relationship between Perceived Usefulness (PU) and Behavioural Intention (BI) ($*r = 0.83$, $*p < .001$), confirming that students who recognized the system's capacity to enhance research originality and supervision quality were significantly more likely

to commit to its continued use. The strength of this association ($d^* = 1.81$) reinforces PU's theoretical primacy in TAM frameworks. A notably strong linkage surfaced between Perceived Ease of Use (PEOU) and Attitude Toward Use (ATU) ($r^* = 0.78$, $p^* < .001$), demonstrating that system usability directly shaped emotional engagement. This large effect ($d^* = 1.48$) implies that navigation simplicity and technical accessibility served as foundational prerequisites for positive user attitudes. The significant correlation between Supervisor Impact (SI) and Perceived Usefulness (PU) ($r^* = 0.71$, $p^* < .001$) revealed that supervisory engagement critically amplified utility perceptions. This large-magnitude relationship ($d^* = 1.20$) highlights how faculty-mediated guidance transformed system functionality into tangible academic value.

All interconstruct correlations exceeded $r^* > 0.60$, confirming coherent theoretical relationships. The consistently large effect sizes (all $d^* > 1.20$) indicate these were not merely statistical artifacts but represented robust psychological linkages. Crucially, the correlation patterns validated TAM's core proposition that cognitive evaluations (PU/PEOU) precede affective responses (ATU), which subsequently drive behavioural outcomes (BI). The significant SI-PU linkage ($r^* = 0.71$) further established supervisor involvement as an extrinsic moderator enhancing intrinsic motivation—a critical nuance for academic technology adoption. These findings collectively confirm that InRES acceptance operates through theoretically coherent psychological pathways despite the constrained sample size.

Regression Analysis

Regression analysis ($R^2 = 0.76$) identified Perceived Usefulness (PU) as the dominant predictor of Behavioural Intention ($\beta = 0.48$, 95% CI [0.25, 0.72], $p < .001$), explaining 38.2% unique variance. Attitude Toward Use ($\beta = 0.39$, $p = .002$) and Supervisor Impact ($\beta = 0.18$, $p = .043$) also significantly influenced adoption, while Perceived Ease of Use (PEOU) showed no significant relationship ($p = .401$). The large effect size ($f^2 = 0.76$) and alignment with meta-analytic TAM findings underscore the robustness of these pathways despite sample limitations.

Discussion

The study shows strong acceptance of the InRES system among MGT651 students at UiTM Pahang (mean = 4.02/5), with Perceived Usefulness (PU) rated highest (mean = 4.18). The system effectively supports topic originality, especially in helping students avoid repetitive research topics (mean = 4.25). PU was the strongest predictor of Behavioural Intention ($\beta = 0.48$, $p < .001$), indicating students value functionality over ease of use. Supervisor Impact (SI) also influenced adoption ($\beta = 0.18$, $p = .042$), with a strong correlation to PU ($r = 0.71$), showing the importance of faculty support. Students with prior research experience reported higher PU and intention to use InRES, highlighting the need for onboarding support for beginners.

CONCLUSION

InRES has proven effective in reducing topic redundancy and improving supervision in UiTM Pahang's MGT651 course. With strong student acceptance (mean = 4.02), its usefulness in identifying novel topics was especially valued. The TAM model confirmed Perceived Usefulness as the key predictor of adoption ($\beta = 0.48, p < .001$), showing students prioritize functionality. Supervisor engagement and prior research experience significantly influenced adoption, highlighting the need for faculty training and beginner support. The acceptance formula—Adoption = $0.48(\text{Usefulness}) + 0.39(\text{Attitude}) + 0.18(\text{Supervisor Support})$ —offers a framework for wider implementation. Future studies should focus on long-term impact and broader application across institutions.

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