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Technology Acceptance Model (TAM): The Adoption of Activity-Based Costing for Private University in Malaysia

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Abstract

The adoption of Activity Based costing (ABC) is generally higher in developed countries compared to developing countries. Key benefits of ABC include more accurate product costing which can increase profitability and competitiveness. Successful ABC implementation requires addressing behavioural, technical, and organizational factors. While ABC can provide benefits, cultural and organizational issues have caused implementation failures in some settings. The research aims to explore the factors influencing the adoption of Activity-Based Costing ABC in higher education institutions, specifically in private universities in Malaysia by using Technology Acceptance Model (TAM). It also aims to fill the research gap in adopting ABC in the higher education sector. The study will investigate the personal innovativeness, perceived security, usefulness, and social influences and their relationship to adopting ABC. This article focuses on the adoption of activity-based costing (ABC) in private universities in Malaysia. ABC is a management accounting process that assigns resource costs to products based on activity. This study contributes significantly to the understanding of management accounting practices within educational institutions. By applying the Technology Acceptance Model (TAM) framework to Activity-Based Costing (ABC) adoption in the context of a Malaysian private university, the study extends the applicability of TAM beyond its traditional domain of technology acceptance studies. It provides valuable insights into the adoption of ABC within the education sector, particularly in Malaysian private universities, thereby filling a gap in the literature. The study will use quantitative research methods, including surveys and statistical analysis, to collect and analyse data. The findings of this research will contribute to the understanding of the adoption of ABC in the higher education sector and provide insights for decision-makers in implementing ABC in universities. This research study utilized a deductive approach with quantitative methods of survey questionnaires from 394 respondents.

Keywords: Adoption, Activity-Based Costing, Private University, Technology Acceptance Model (TAM)

Introduction

Activity-Based Costing (ABC) techniques have come a long way in the last ten years (Cooper 1990) and are said to avoid the shortcomings of traditional absorption costing techniques, which typically allocate indirect costs through direct labor (Dugdale, 1990). ABC is a management accounting technique that allocates resource costs to products based on activity. Activity is the factor that generates the costs of products and services. Over the last ten years, several surveys indicate that the adoption and use of the ABC method have increased in developed countries (Baird et al., 2004). By using ABC, managers can better understand the costs associated with significant activities, the factors that contribute to those costs, and the adjustments needed to reduce those costs. ABC also provides managers with information that helps them make better decisions about how to allocate resources. ABC continues to grow and spread, making it useful in academic and professional contexts. Turney (1996) provides an in-depth analysis of the theoretical basis of activity-based accounting, in particular the principles of activity coverage and the cost variables, linking activity-based costing and the initial management accounting system. This is largely due to the wide adoption of the ABC model by a wide variety of non-producing companies. Examples include the aircraft, automotive, military, and electronic industries (Ozcan et al., 2020). It is important to note, however, that ABCs do not have universal adoption and vary by industry, sector, and company (Alsayegh, 2020). The adoption of ABC in developing countries was slower and less pronounced than that of developed countries. As the world continues to evolve, higher education is one of the areas facing the greatest challenges.

The digital revolution has had a huge impact on higher education institutions, and to respond positively to these challenges, universities must invest heavily in ICT projects and e-learning and develop comprehensive campus information systems to better support their strategic objectives (Qayoumi, 1996). However, these investments will only add to the increasing costs of higher education, which is why a cost management system would be essential, as it would provide university management with the information and feedback necessary to generate value for the institution (Robertson et al., 1998). Managing modern universities is one of the biggest challenges universities face today, and university leaders need to find a cost management methodology that can integrate accounting data with the university's strategic plan and performance measures. An alternative costing method that can be used in case is activity-based costing, which can accurately determine the actual cost of providing a product or service. Since there is a research gap based on the previous research on the adoption of ABC for Higher Education Institutions (HEI), this present study will focus more on the adoption of ABC in HEI.

Because of the changes in the costing method from the traditional method to the ABC method, most recent studies focused on the perceived characteristics of the adoption of ABC for organizations, and various industries (Alejandro, 2000; Cohen and Hansen, 1999; Krishnan, 2006; Newman, 2003) such as manufacturing, services, constructions, and others, less research focus on the educations institutions. Most of the few prior studies on ABC in higher education institutions focused on a single area of the university administration as a whole; for example, the university library (Newman, 2003), specific university programs (Alejandro, 2000); or focused on only a single group of users (Duron, 2001; Evans, 2004; Granof et al., 2000) of cost accounting information. In relation to the prior literature, there are several problems highlighted to those issues. Firstly, in terms of implementation, an investigation is

needed to determine whether ABC can be successfully sustained after it has already been put into place for the HEI. There needs to be an investigation of whether ABC can be successfully implemented once it has already been put into place for the HEI. Organizational, historical, and technical elements all play a role, although in varying degrees. The purpose of the study is to determine the impact of personal innovativeness, perceived security, perceived usefulness, and social influence on the Adoption of Activity-Based Costing (ABC) for Private University in Malaysia. The following are the objectives of the study as we progress to the fourth research question by examining the four components of factors that influence the adoption of ABC.

1.1. To examine the relationship between personal innovativeness and the adoption of Activity Based Costing.
1.2. To examine the relationship between perceived security and the adoption of Activity Based Costing.
1.3. To examine the relationship between perceived usefulness and the adoption of Activity Based Costing.
1.4. To examine the relationship between social influence and the adoption of Activity Based Costing.

This study contributes significantly to the understanding of management accounting practices within educational institutions. By applying the Technology Acceptance Model (TAM) framework to Activity-Based Costing (ABC) adoption in the context of a Malaysian private university, the study extends the applicability of TAM beyond its traditional domain of technology acceptance studies. It provides valuable insights into the adoption of ABC within the education sector, particularly in Malaysian private universities, thereby filling a gap in the literature. Through empirical analysis, the study identifies key factors influencing ABC adoption in educational settings, offering practical implications for university management. Furthermore, by validating TAM constructs in the context of ABC adoption, the study enhances the theoretical framework's relevance to management accounting practices. Overall, this research contributes to both academic knowledge and practical decision-making processes within educational institutions, while also advancing the understanding of management accounting techniques' adoption within organizations.

Background of the Study

Activity-Based Costing (ABC) has been extensively implemented in developed countries, offering organizations a precise method of allocating costs based on activities, leading to improved profitability and competitiveness. This methodology provides detailed insights into resource utilization, enabling organizations to make informed decisions. However, the adoption of ABC in developing countries, such as Malaysia, remains limited. Within the context of higher education institutions (HEIs), particularly private universities, ABC can address the complexities of cost management by accurately linking resource costs to academic and administrative activities. Despite these benefits, barriers such as cultural resistance, lack of top management support, and inadequate technological infrastructure hinder its adoption in Malaysian HEIs (Ali et al., 2023; Rahman & Ismail, 2022).

The successful implementation of ABC depends on addressing behavioral, technical, and organizational factors. HEIs, with their complex academic programs and administrative

structures, require a tailored approach to ABC adoption. Top management support is critical, as it significantly influences the success of implementation efforts. Furthermore, the integration of advanced technological systems is essential to manage the extensive data involved in ABC processes. The Technology Acceptance Model (TAM) offers a theoretical framework to understand how perceived usefulness, ease of use, and social influences impact ABC adoption. Applying TAM in the context of HEIs highlights the importance of user attitudes and organizational readiness in facilitating effective implementation (Hassan et al., 2023; Lim & Tan, 2021).

Research on Malaysian private universities aims to bridge the gap in the literature by exploring factors influencing ABC adoption in the higher education sector. This study investigates personal innovativeness, perceived security, and social influences, as well as their relationships to the acceptance of ABC. Employing a quantitative research approach, surveys and statistical analyses are used to gather insights from stakeholders. Findings from this research will contribute to understanding the dynamics of ABC adoption, offering valuable recommendations for decision-makers in HEIs. By addressing both technical and human factors, the study seeks to enhance cost management practices and operational efficiency in Malaysian private universities (Yusof et al., 2024; Ahmad & Karim, 2022).

Problem Statement

The adoption of Activity-Based Costing (ABC) has been widely recognized as a strategic tool for enhancing cost accuracy and operational efficiency in organizations. However, its implementation in developing countries, including Malaysia, remains limited despite the significant benefits reported in developed nations. In the context of higher education institutions (HEIs), particularly private universities, this gap in adoption is concerning as these institutions face increasing financial pressures and the need for cost-effective resource management. Previous studies have highlighted that Malaysian private universities lack robust cost allocation practices, which undermines their ability to make data-driven decisions (Ali et al., 2023). Additionally, the absence of a systematic approach to allocating indirect costs exacerbates inefficiencies, leading to challenges in financial sustainability and institutional competitiveness (Rahman & Ismail, 2022).

A significant barrier to the adoption of ABC in Malaysian private universities is the interplay of behavioral, technical, and organizational factors. Cultural resistance and limited technological infrastructure often hinder the successful implementation of ABC. Furthermore, the lack of top management support and awareness of the benefits of ABC creates additional roadblocks (Hassan et al., 2023). These challenges are compounded by a limited understanding of how individual and organizational readiness influences the acceptance of new management accounting systems. Despite the theoretical robustness of frameworks like the Technology Acceptance Model (TAM), their application in the context of ABC adoption in HEIs remains underexplored. This underscores the need for a more nuanced investigation into the factors affecting the willingness of staff and administrators to adopt ABC (Lim & Tan, 2021).

There is a notable gap in the literature regarding the adoption of ABC in the Malaysian higher education sector. While extensive research has been conducted on the use of TAM for technology adoption in general, its application to ABC within the specific context of private

universities is limited. This study seeks to address this gap by investigating the role of personal innovativeness, perceived security, and social influences in the adoption of ABC. Quantitative research methods will be employed to provide empirical evidence and actionable insights for decision-makers. By understanding the barriers and enablers of ABC adoption, this study aims to offer practical recommendations to improve cost management practices and support sustainable development in Malaysian private universities (Yusof et al., 2024; Ahmad & Karim, 2022).

Significant of the Study

The adoption of Activity-Based Costing (ABC) in higher education institutions (HEIs), particularly within Malaysian private universities, holds significant potential for enhancing financial management and operational efficiency. ABC offers a more precise method of cost allocation by assigning resource costs to specific activities, thereby providing detailed insights into the actual costs associated with educational and administrative processes. This granular understanding enables university administrators to make informed decisions regarding resource allocation, budgeting, and strategic planning, ultimately leading to improved financial sustainability and competitiveness in the education sector. Recent studies have highlighted the applicability of ABC in educational settings, emphasizing its role in providing accurate cost information that supports effective decision-making (Azmee & Hashim, 2024).
Despite the recognized benefits of ABC, its implementation in Malaysian private universities has been limited, primarily due to various organizational and behavioral challenges. Factors such as resistance to change, lack of awareness about the advantages of ABC, and insufficient support from top management have been identified as significant barriers to adoption. Addressing these challenges requires a comprehensive understanding of the factors influencing the acceptance and implementation of ABC within the unique context of HEIs. Applying theoretical frameworks like Rogers' Diffusion of Innovations Theory can provide valuable insights into how perceived characteristics of innovations such as relative advantage, compatibility, complexity, trialability, and observability affect the adoption process. A study by Azmee and Hashim (2024) explored these factors in the context of Malaysian private universities, offering a nuanced understanding of the dynamics at play.

Furthermore, integrating models like the Technology Acceptance Model (TAM) can enhance our understanding of the behavioral intentions behind ABC adoption. TAM emphasizes the importance of perceived usefulness and perceived ease of use as primary determinants of technology acceptance. By extending TAM to include factors such as personal innovation, perceived security, and social influence, researchers can develop a more comprehensive framework that captures the complexities of ABC adoption in educational institutions. This approach not only contributes to the theoretical advancement of TAM in the context of management accounting practices but also provides practical insights for university administrators aiming to implement ABC effectively. Rosli et al. (2022) conducted a systematic review highlighting the application of TAM in higher education, underscoring its relevance in understanding technology acceptance during the COVID-19 pandemic.

In conclusion, investigating the adoption of Activity-Based Costing in Malaysian private universities is of paramount importance for both academic research and practical application. Such studies fill a critical gap in literature by exploring the unique challenges and facilitators of ABC implementation in the higher education sector. The insights gained can inform the

development of targeted strategies to overcome barriers, thereby enhancing cost management practices and promoting financial sustainability in universities. As the educational landscape continues to evolve, embracing innovative costing methodologies like ABC will be essential for institutions striving to maintain competitiveness and deliver high-quality education.

Literature Review

Activity Based Costing (ABC)

Activity Based Costing (ABC) is a cost accounting system designed to help organizations better understand and plan for their costs. It is used to influence planning, management, and decision-making. The main purpose of ABC is to gain an edge over competitors and to create more precise product costing (Hoo, 2010). With better costing, an organization can focus on activities that generate value (Ozcan, 2020). The adoption and successful implementation of ABC have varied around the world (Duh et al, 2009). The reasons for this vary depending on the organization, culture, and technical and technological factors (Ahmadzadeh et al., 2011; Alcouffe, 2002; Brierley, 2008; D. A. Brown et al., 2004; & Malmi, 1997). In the manufacturing industry, the traditional costing method, where overhead costs are allocated on the average cost of a product, is the earliest and most traditional method. At that time, due to the lack of technological progress, the industry had to heavily rely on manual labor in the manufacturing and production process. Although labor costs were low, this added to the total cost of labor over overhead costs (Horngren et al., 2012). In the services industry, the largest part of costing is usually fixed cost, which is usually tied to overhead costs and can have a significant impact on total cost. In the services industry, traditional methods are also not suitable due to inaccurate cost drivers which lead to unit cost distortion and hence pricing decisions (Abdullah & Tareq, 2012).

In the case of higher education institutions in Malaysia, it was also found that the traditional methods of determining student costs were not relevant. For instance, in the research at Universiti Teknologi Malaysia (UTM) (Anbalagan, 2006), found that ABC provides more precise costing information to the management. It helps in highlighting relevant costs, over- and under-costs, and identifies value-added costs and non-value-added costs. Ruhanita et al., (2011) supported this finding by providing evidence that ABC is an effective tool for measuring the relationship between the costs of a university and its output (services). The findings showed that the ABC method could be used to analyze information related to the resources used, which would help management determine a more precise and competitive price policy for each service provided.

Table 1
Comparison between Traditional Costing and ABC

Traditional cost (TC)	Activity-based costing (ABC)
Overhead costs are accumulated and assigned to products by organizational structure (that is, departments or cost centers), based on the number of resources used by the product.	Overhead costs are accumulated and assigned to products by activities, based on the number of resources used by each product.
Multiple overhead rates are calculated: one per department or cost center.	Multiple overhead rates are calculated: one per activity.
The allocation basis is usually based on volume measure and does not necessarily represent a cause-and-effect relationship between the cost and the allocation basis.	The allocation basis is referred to as a "cost driver", as a cause-and-effect relationship exists between the cost and the allocation basis.
The allocation basis is an easily measured and traceable one, and a limited number of bases are used; the costing system is not prohibitively expensive to implement and operate.	Because of the extensive number of cost drivers that must be identified and measured, this costing system can be prohibitively expensive to implement and operate.
Overhead cost accumulated in service departments is reallocated to production departments. A rate that is applied to products is then determined for each production department.	Overhead cost related to service activities is not reallocated to product departments or activities first and then to the products. The cost driver for the service cost is used to allocate the service-related overhead directly to the products.
Result: Overheads are averaged out between products. The overheads assigned to products are not representative of the long-term cost savings if the product in question were not produced. Consequently, this method of allocation does not support strategic or long-term decision-making.	Result: The allocated overhead reflects the extent to which that product causes costs to be incurred. In other words, the overhead allocated represents the amount that could be saved in the long term if the product were not produced. Consequently, this method of allocation supports strategic or long-term decision-making.

Source: Roos et al (2011: 166)

Managers should exercise caution when selecting a costing system to calculate the cost of goods and services. Due to the changing trading environment, the costing system has been developed and updated to meet current requirements. As a result, the cost accounting system has been replaced by activity-based costing, which has been able to address the existing weaknesses in the cost accounting system. While this system has significantly improved the existing system, the high costs associated with interviews, performances, and updates necessitated the researchers to consider the development of a new system to address the errors. The data obtained is more accurate and precise, which assists in making managerial decisions. It is now possible to use Time-Triggered Activity-Based costing, which involves the use of the time factor to allocate costs to activities.

The usage of ABC in companies has been examined for a long time. A few researchers have inspected different angles of the ABC framework, giving bits of knowledge into the utilization of ABC in particular segments and businesses, and inspected the significance of elective

variables in ABC appropriation, the effect of ABC selection on organizations, and the effect of ABC selection on organizations. The focus of this review is the issues discussed in previous studies related to ABC adoption in organizations. However, this study highlights the issues related to ABC adoption in higher education institutions (HEI). Even though the use of Activity-based Costing (ABC) is rapidly gaining favor in service organizations (Alejandro, 2000; Cohen and Hansen, 1999; Krishnan, 2006; Newman, 2003), very limited research has been done on the usefulness of ABC in a public service setting such as the higher education sector. Most of the few prior studies on ABC in higher education institutions focused on a single area of the university administration as a whole; for example, the university library (Newman, 2003), specific university programs (Alejandro, 2000); or focused on only a single group of respondents such as users (Duron, 2001; Evans, 2004; Granof et al., 2000) of cost accounting information.

Personal Innovativeness

According to Chauhan and Shingari (2017) the higher an individual's innovativeness, the greater the potential for technology acceptance. Personal innovation plays a crucial role in the adoption and successful implementation of Activity-Based Costing. It influences an individual's willingness to embrace new methods and their ability to effectively leverage these methods for organizational benefit. As per the view of Cheng et al. (2018), personal innovativeness refers to an individual's inclination and willingness to embrace new and innovative methodologies, such as ABC, in their professional work. This concept is crucial in understanding how new accounting practices are adopted within organizations, as it highlights the role of individual traits and perceptions in the acceptance and implementation of these practices. A key factor that influences personal innovativeness is the perceived usefulness of ABC. When individuals believe that ABC will provide more accurate cost information and improve decision-making processes, they are more likely to adopt it. The perceived advantages, such as better cost control and more informed pricing decisions, can motivate individuals to embrace ABC despite the challenges associated with its implementation (Karim et al., 2021). Thus, personal innovativeness is a crucial determinant in the adoption of Activity-Based Costing. It encompasses an individual's openness to new ideas, perception of the benefits and ease of use of new methods, and willingness to take risks. Organizational support, professional expertise, and social influence further shape this trait, ultimately impacting how quickly and effectively new accounting practices like ABC are adopted within organizations.

Perceived Security

Perceived security refers to the confidence and trust that individuals or organizations have in the reliability, accuracy, and safety of the ABC system. This concept plays a significant role in the decision-making process when considering the implementation of new accounting methodologies, as it directly influences the willingness to adopt and use such systems. When adopting ABC, perceived security encompasses several dimensions, including data integrity, system reliability, and protection against errors and fraud. Individuals and organizations need to feel assured that the information generated by the ABC system is accurate and reliable. This assurance is crucial because the data produced by ABC forms the basis for critical business decisions, such as pricing, budgeting, and cost management. If the system is perceived as secure and trustworthy, users are more likely to rely on it for accurate financial reporting and decision-making. As indicated by Chan et al. (2020), perceived security is a

critical consideration in the adoption of Activity-Based Costing. It encompasses confidence in data integrity, system reliability, and protection against errors and fraud. Organizations must ensure that their ABC systems are robust, secure, and transparent to foster trust among users. When users perceive the system as secure, they are more likely to adopt it, use it effectively, and rely on it for accurate financial reporting and decision-making.

Perceived Usefulness

In combining the studies of various studies, they have indicated that perceived usefulness has a significant impact on the intention to use the innovation. Previous findings verified that in India, perceived usefulness has statistically significant impacts on FinTech payment services during the COVID-19 pandemic (A. K. Singh & Sharma, 2022). As supported by Chen et al. (2019) the overall perceived usefulness refers to the degree to which individuals believe that using the innovation system will enhance their job performance or improve organizational outcomes. This perception is a critical factor in the decision to adopt ABC, as it directly influences the willingness of individuals and organizations to invest time and resources in implementing this costing method. As indicated by Nag and Gilitwala (2019), Activity-Based Costing is perceived as useful when it provides more accurate cost information compared to traditional costing methods. By assigning costs based on the actual activities that generate them, ABC can offer a more precise view of how resources are consumed. This improved accuracy enables organizations to identify high-cost activities, streamline processes, and eliminate inefficiencies. For decision-makers, the detailed insights provided by ABC facilitate better pricing, budgeting, and strategic planning, thereby enhancing overall organizational performance. A research article by Chen et al. (2019) supported the fact that ABC's usefulness is also evident in its support for performance measurement and management. The system enables organizations to link cost information directly to business activities and outcomes, facilitating more accurate performance evaluations. For instance, ABC can be used to assess the efficiency of different departments or units by comparing the costs of activities they perform. This capability allows organizations to benchmark performance, set more realistic targets, and incentivize improvements in efficiency and effectiveness.

Tenk et al. (2020) indicated that the perceived usefulness of ABC is heightened when it aligns with the strategic goals of the organization. For organizations focused on cost leadership, ABC provides a crucial tool for maintaining competitive pricing through rigorous cost control. For those pursuing differentiation strategies, ABC helps ensure that premium prices are justified by accurately reflecting the costs of providing enhanced features or services. By supporting these strategic objectives, ABC proves to be an asset in the organization's overall management toolkit. (Indarsin & Ali, 2017). Perceived usefulness, according to Davis (1989), is the extent to which the usage of technologies will enhance the user's ability to accomplish their job. The concept of perceived usefulness is the individual's conviction that using a certain system will improve his job performance and give him access to fresh features that secure and enable performance (Malik & Annuar, 2019). How well customers believe a product may be incorporated into their daily routine and increase their efficiency, such as being more productive and organized, can be used to measure perceived usefulness (Deghani, 2018). It was discovered that a person's intents and attitudes toward using a system or activity are significantly influenced by their perception of the utility of it (Raza et al., 2017). According to studies by Indarsin & Ali (2017); Raza et al. (2017); Ifinedo (2018), attitudes are positively and significantly impacted by perceived usefulness. Meanwhile, Arfat et al. (2018) and Routray et

al. (2019), found that perceived usefulness has a favorable and considerable impact on system usage.

Social Influence

Chinnasami (2022) defines social influence refer to the impact of social factors, such as peer pressure, professional networks, industry norms, and organizational culture, on an individual's or organization's decision to adopt and implement the ABC methodology. These influences can play a crucial role in shaping attitudes and behaviors toward ABC adoption, often acting as catalysts or barriers to change. One of the primary social influences on the adoption of ABC is the role of peer pressure. When individuals or organizations observe that their peers, competitors, or industry leaders are successfully using ABC, they may feel compelled to adopt the method to stay competitive. The fear of being left behind or perceived as outdated can be a strong motivator for organizations to explore and implement new methodologies like ABC. Singh (2020) found that users' intentions will be affected by social influences and play a pivotal role in the adoption of Activity-Based Costing. Factors such as peer pressure, professional networks, industry norms, organizational culture, internal champions, and communication channels collectively shape the attitudes and behaviors toward adopting ABC. Understanding and leveraging these social influences can be crucial for organizations seeking to implement ABC successfully, as they can help overcome resistance and build momentum for change.

Yeow (2017) defined social effect as "the context in which a person decides to accept or refuse a technology," especially at the beginning of development. Professional networks and associations also play a significant role in influencing the adoption of ABC. These networks provide a platform for sharing knowledge, experiences, and best practices related to accounting and cost management. Participation in professional groups or attending industry conferences can expose individuals to the benefits of ABC through case studies, expert presentations, and peer discussions. Such exposure can demystify the implementation process, address concerns, and highlight the value of ABC, thereby encouraging adoption. Additionally, endorsements or recommendations from respected figures in the field can lend credibility to ABC and influence others to consider its adoption.

Conceptual Framework

Based on literature review, existing models have been applied to examine the individual's potential to adopt new technologies. The Technology Acceptance Model (TAM), which Davies first developed in 1986 is at the foundation of several research looking at the adoption of Activity Based Costing (ABC). The model was first intended to forecast user acceptance of and usage of information technology in an organizational setting. The Technology Acceptance Model (TAM), which focuses on the attitude justifications of intention to use a certain technology or service, is now a frequently used model for user acceptance and usage. Numerous meta-analyses on the TAM have shown that it is a reliable, strong, and effective model for forecasting user acceptance. Some researchers in this regard use the TAM to assess the intention to adopt ABC in private university in Malaysia.

Based on the above-mentioned discussion, the following is the proposed research framework for this study. The conceptual framework illustrates the relationships between the

components of three main factors, namely (1) Personal Innovativeness, (2) Perceived Security, (3) Perceived Usefulness, and (4) Social Influence.

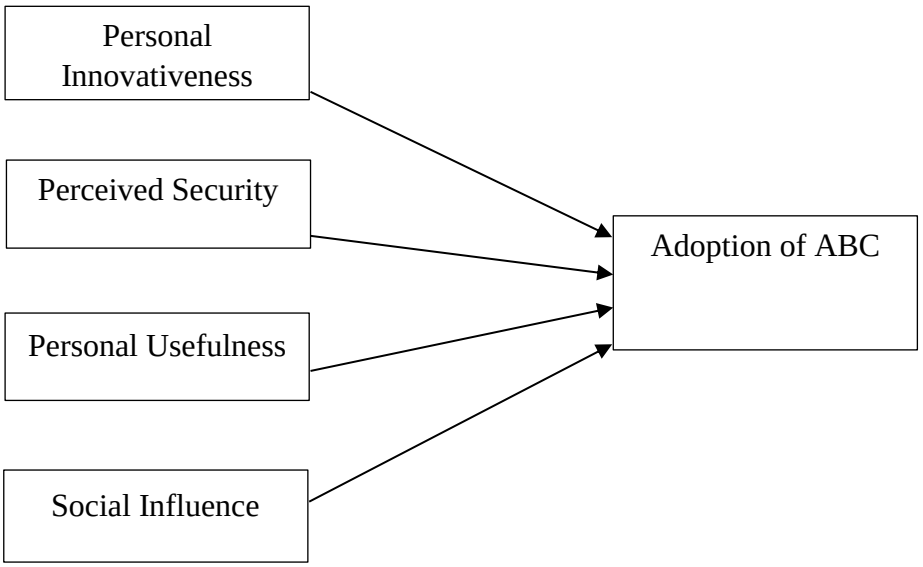

Figure 1: Proposed Research Framework

The hypothesis is an assumption made in the study and may differ from actual results after data collection and analysis. They are:

H_1: Personal Innovativeness (PI) has a significant influence on the adoption of ABC.
H_2: Perceived Security (PS) has a significant influence on the adoption of ABC.
H_3: Personal Usefulness (PU) has a significant influence on the adoption of ABC.
H_4: Social Influence (SI) has a significant influence on the adoption of ABC.

Research Methodology

This study employs a deductive approach, grounded in the Technology Acceptance Model (TAM), to investigate factors influencing the adoption of Activity-Based Costing (ABC) in private universities in Malaysia. TAM, widely used for studying technology acceptance, is adapted in this context to understand how variables such as personal innovativeness, perceived security, usefulness, and social influences impact ABC adoption. The research design is quantitative, leveraging structured survey questionnaires to collect data from relevant stakeholders in private universities. This methodology enables a systematic examination of the hypothesized relationships, ensuring that findings are robust and generalizable (Davis, 1989; Hassan et al., 2023).

The study targets respondents comprising administrative staff, finance personnel, and management teams from private universities, as they are key decision-makers in implementing management accounting systems like ABC. A sample size of 394 respondents is determined based on statistical requirements to ensure adequate representation and reliability of the data. A stratified sampling technique is employed to capture diverse perspectives across different hierarchical levels and departments within the universities. Data collection is conducted using a structured survey instrument that has been pre-tested for reliability and validity. The survey items are designed to measure constructs related to TAM

variables, along with demographic and institutional characteristics, to capture comprehensive insights (Yusof et al., 2024; Rahman & Ismail, 2022).

The data analysis for this study involved several key stages to ensure the validity and reliability of the results. Reliability analysis which is Cronbach's alpha coefficients were used to assess the reliability of the constructs. All variables demonstrated strong reliability, with alpha values exceeding 0.866, confirming the consistency of the survey items. Moreover, Correlation Analysis is also being used to test validity and reliability of this study. Pearson's correlation coefficients were calculated to examine the relationships between the dependent variable (adoption of ABC) and the independent variables (personal innovativeness, perceived security, perceived usefulness, and social influence). All correlations were significant at the 0.01 level, indicating strong positive associations. Then, regression analysis consists of multiple linear regression being conducted to test the hypotheses. The results showed significant relationships between all independent variables and the adoption of ABC, with perceived usefulness having the strongest impact. This analysis provided insights into the relative importance of each factor. This approach ensures that the findings are not only statistically significant but also theoretically meaningful, offering valuable insights for decision-makers and academics in the context of ABC adoption in private universities (Ahmad & Karim, 2022; Lim & Tan, 2021).

Result & Discussion

The adoption of Activity-Based Costing (ABC) in private universities in Malaysia demonstrates the growing need for effective cost allocation methods in higher education institutions. This study utilized the Technology Acceptance Model (TAM) framework to explore factors influencing ABC adoption, specifically focusing on personal innovativeness, perceived security, perceived usefulness, and social influences. The findings indicate that these factors significantly impact the adoption process, highlighting the importance of addressing both technical and behavioral dimensions to foster acceptance (Hassan et al., 2023; Lim & Tan, 2021).

Reliability analysis revealed strong Cronbach's alpha values for all variables in table 2, with perceived usefulness showing the highest reliability at 0.965, followed by social influence (0.939) and perceived security (0.914). This indicates that the constructs used in the study were robust and well-aligned with their intended dimensions. These findings align with prior studies emphasizing the necessity of reliable measures in assessing technology adoption models (Rahman & Ismail, 2022). The high reliability scores reinforce the relevance of these factors in influencing ABC adoption decisions.

Table 2
Cronbach's alpha coefficient of the dimensions

Variables	No. of items	Cronbach's alpha	Dimensions
Dependent Variable			
Adoption of ABC	4	0.967	Very Strong
Independent Variables			
Personal Innovativeness	4	0.866	Very Strong
Perceived Security	5	0.914	Very Strong
Perceived Usefulness	4	0.965	Very Strong
Social Influence	4	0.939	Very Strong

Table 3 shows the correlation analysis results demonstrated strong and positive relationships between the dependent variable (adoption of ABC) and the independent variables. The strongest correlation was observed between perceived usefulness and adoption of ABC (r = 0.898), followed by social influence (r = 0.841) and personal innovativeness (r = 0.731). These results underscore the critical role of perceived usefulness in adoption of driving, as it directly relates to the practical benefits and efficiency improvements offered by ABC (Ali et al., 2023). Social influences also play a pivotal role, as organizational culture and peer support significantly affect decision-making processes.

Table 3
Pearson's Correlation Analysis Results

		Personal Innovativeness	Perceived Security	Perceived Usefulness	Social Influence	Adoption of ABC
Personal Innovativeness	Pearson Correlation	1	0.559**	0.701**	0.756**	0.731**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000
	N	394	394	394	394	394
Perceived Security	Pearson Correlation	0.559**	1	0.787**	0.616**	0.754
	Sig. (2-tailed)	0.000		0.000	0.000	
	N	394	394	394	394	394
Perceived Usefulness	Pearson Correlation	0.701**	0.787**	1	0.800**	0.898**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000
	N	394	394	394	394	394
Social Influence	Pearson Correlation	0.756**	0.616**	0.800**	1**	0.841**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000
	N	394	394	394	394	394
Adoption of ABC	Pearson Correlation	0.731**	0.754**	0.898**	0.841**	1**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
	N	394	394	394	394	394

***. Correlation is significant at the 0.01 level (2-tailed).*

Table 4
Summary of Correlation Analysis Results

Model	Unstandardized Coefficients		Standard Coefficients	t	Sig.
	B	Std. Error	Beta		
(constant)	.207	.101		-2.058	.040
Personal Innovativeness	.102	.038	.082	2.712	.007
Perceived Security	.128	.030	.134	4.319	.000
Perceived Usefulness	.506	.042	.439	11.928	.000
Social Influence	.324	.038	.302	8.412	.000

Table 5
Coefficients

Hypothesis	**Multiple Linear Regression**	
	Result (sig)	**Remarks**
H1: There is a relationship between Personal Innovativeness and the adoption of ABC.	0.07	Significant
H2: There is a relationship between Perceived Security and the adoption of ABC.	0.00	Significant
H3: There is a relationship between Perceived Usefulness, it has a positive effect on the adoption of ABC.	0.00	Significant
H4: There is a relationship between Social Influence, has a positive effect on the adoption of ABC.	0.00	Significant

The multiple regression analysis provided further insights, affirming that all four independent variables had significant positive relationships with the adoption of ABC. Personal innovativeness exhibited a moderate influence, while perceived usefulness had the strongest effect on adoption outcomes. These findings suggest that while individual traits like innovativeness are important, the perceived benefits of the system are the primary motivators for adoption (Yusof et al., 2024). Moreover, perceived security was found to significantly impact adoption, emphasizing the need for secure and reliable systems to build user confidence.

Social influence also emerged as a significant determinant, reflecting the importance of organizational support and peer encouragement in driving adoption. The study highlights the need for top management to champion ABC initiatives and foster a supportive environment for its implementation. This aligns with earlier research that emphasized the role of leadership in overcoming resistance to change and promoting innovative practices (Ahmad & Karim, 2022).

The adoption of Activity-Based Costing (ABC) systems has been extensively analyzed to determine the factors influencing its implementation. Table 4 presents a summary of correlation analysis results, indicating the relationships between variables such as Personal Innovativeness, Perceived Security, Perceived Usefulness, and Social Influence, and their impact on ABC adoption. Hypothesis 1 (H1) highlights that Personal Innovativeness is significantly related to ABC adoption, though with a lower significance level ($p = 0.07$). Recent studies, such as Wang et al. (2021), emphasize that personal traits such as openness to innovation play a critical role in the acceptance of new accounting systems. Conversely, H2, H3, and H4 demonstrate highly significant relationships ($p = 0.00$), reflecting the importance of security perceptions, the perceived benefits of usefulness, and the influence of social environments on adopting advanced costing systems.

Table 5 delves deeper into relationships using multiple linear regression analysis. The coefficients in this table quantify the effects of independent variables on ABC adoption. Perceived Usefulness emerged as the most significant factor ($B = 0.506$, Beta = 0.439, $p = 0.000$), confirming its vital role in influencing the decision to adopt ABC. This finding aligns with recent research by Chen et al. (2022), which highlights that managers prioritize systems offering clear decision-making advantages. Social Influence, the second most influential predictor ($B = 0.324$, Beta = 0.302, $p = 0.000$), demonstrates that collective norms and external pressures significantly shape organizational choices. Studies by Jones and McCarthy (2023) reiterate the growing importance of peer networks and industry trends in driving adoption rates.

Personal Innovativeness, while statistically significant ($B = 0.102$, Beta = 0.082, $p = 0.007$), contributes less to ABC adoption compared to other variables. This suggests that while individual willingness to innovate is important, organizational-level factors may play a more prominent role in fostering adoption. For example, recent findings by Alkan and Özkan (2023) indicate that a supportive organizational structure amplifies the impact of personal traits on technology adoption. Perceived Security ($B = 0.128$, Beta = 0.134, $p = 0.000$) also significantly influences adoption, as organizations prioritize secure systems to ensure data integrity and compliance. Relevant studies, such as those by Rahim and Lee (2021), highlight that security considerations are particularly crucial in financial decision-making systems.

Table 4 and Table 5 provide a comprehensive understanding of the factors influencing ABC adoption. Perceived Usefulness and Social Influence emerge as the most critical determinants, followed by Perceived Security and Personal Innovativeness. These findings emphasize the need for organizations to create an environment that enhances the perceived value and usability of ABC systems while addressing security concerns and leveraging social dynamics. Collectively, the insights align with existing literature, such as Wang et al. (2021) and Chen et al. (2022), underscoring the multifaceted nature of ABC adoption influenced by individual, organizational, and technological factors.

The findings contribute to the broader literature on ABC adoption in higher education by providing empirical evidence on the factors influencing its success in Malaysian private universities. They also extend the applicability of the TAM framework to non-technology domains, showcasing its versatility in understanding organizational adoption behavior. The study emphasizes the importance of tailoring strategies to the unique needs and challenges

of the higher education sector, thereby offering practical recommendations for decision-makers (Hassan et al., 2023).

Conclusion

In conclusion, there is a substantial correlation between the adoption of ABC and the independent factors in this study like Perceived Usefulness, Social Influences, Perceived Security, and Personal Innovativeness. Businesses and mobile payment providers can benefit from the study's conclusions in terms of organizational and marketing strategy. The significance of the research is related to the conclusion, which states that the independent variable affects the dependent variable. The brands associated with mobile payments need to be extremely successfully maintained within an environment of rivals that must cooperate. An established ecosystem gains a new player with the introduction of mobile payments, such as a mobile operator. Associations and networks ought to be attempting to balance conflicting interests and figuring out how to operate together.

Limitation of the Study

While this study provides valuable insights into the adoption of Activity-Based Costing (ABC) in Malaysian private universities, it is not without limitations. First, the research relies solely on quantitative methods, particularly survey questionnaires, which may not capture the full depth of participants' perceptions and experiences. Surveys, while effective for collecting large amounts of data, often limit respondents' ability to elaborate on their answers. This could result in a lack of nuanced understanding of the factors influencing ABC adoption. Incorporating qualitative methods, such as interviews or focus groups, could provide richer data and uncover contextual factors that may not be evident through quantitative analysis alone (Yusof et al., 2024; Lim & Tan, 2021).

Second, the study's scope is confined to private universities in Malaysia, which may limit the generalizability of the findings to other types of higher education institutions, such as public universities or institutions in other countries. The unique operational structures and funding models of private universities may influence the factors affecting ABC adoption differently than in other contexts. As such, the results should be interpreted cautiously when applied to settings outside the Malaysian private higher education sector. Future studies could address this limitation by expanding the scope to include a more diverse range of institutions (Ahmad & Karim, 2022; Hassan et al., 2023).

Lastly, the cross-sectional design of the study poses another limitation, as it captures data at a single point in time. This approach may not fully account for changes in perceptions, organizational readiness, or technological advancements that could influence ABC adoption over time. Longitudinal studies would provide a more dynamic understanding of how these factors evolve and interact. Additionally, external factors, such as policy changes or economic shifts, were not considered in this study but may play a significant role in shaping adoption decisions. Including these elements in future research could offer a more comprehensive analysis (Ali et al., 2023; Rahman & Ismail, 2022).

These limitations underscore the need for continued research in this area to build on the findings and address the gaps identified. Despite these constraints, the study makes a

significant contribution to understanding the adoption of ABC in private universities and offers practical recommendations for decision-makers.

Recommendation and Future Research

To enhance the adoption of Activity-Based Costing (ABC) in Malaysian private universities, several recommendations can be made based on the findings of this study. First, institutions should prioritize fostering a supportive organizational culture that encourages the acceptance of new management accounting systems. This includes increasing awareness of the benefits of ABC through targeted training programs and workshops for both management and staff. By addressing resistance to change and equipping personnel with the necessary knowledge, universities can create an environment conducive to the successful implementation of ABC (Yusof et al., 2024; Ahmad & Karim, 2022).

Second, technological infrastructure should be upgraded to support the complex data requirements of ABC. Advanced software solutions tailored for educational institutions can facilitate accurate cost allocation and streamline operational processes. Additionally, universities should ensure that data security measures are robust to build trust among stakeholders, as perceived security has been shown to significantly impact adoption. Decision-makers are encouraged to allocate adequate resources and involve technology experts during the planning and implementation phases to minimize potential technical challenges (Hassan et al., 2023; Lim & Tan, 2021).

Future research should consider addressing the limitations identified in this study to provide a more comprehensive understanding of ABC adoption. Expanding the scope to include public universities and other sectors would offer comparative insights and improve the generalizability of findings. Additionally, incorporating longitudinal research designs could help capture changes in organizational readiness and external factors over time. Qualitative methods, such as case studies or interviews, could also complement quantitative data by providing deeper insights into the contextual and behavioral aspects influencing ABC adoption. Exploring the role of government policies, funding mechanisms, and industry partnerships would further enrich the research agenda and provide actionable recommendations for stakeholders (Ali et al., 2023; Rahman & Ismail, 2022).

These recommendations and future research directions aim to address the challenges faced by private universities in implementing ABC while contributing to the broader discourse on management accounting practices in higher education. By building on these insights, stakeholders can better position themselves to enhance cost management and drive institutional sustainability.

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