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Enhancing Financial Management through Strategic Implementation of Activity-Based Costing: A Case Study Approach in Higher Education

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Abstract: Activity-Based Costing (ABC) is an accounting technique utilized to allocate costs to products, services, or activities based on their resource consumption. While previous research has largely focused on ABC within corporate environments, this study explores its application within the context of higher education in Thailand. By employing a comprehensive case study approach, this research illustrates the practical advantages of ABC over traditional costing methods and its potential to enhance strategic decision-making through precise cost allocation. The study aims to address issues related to integrated overhead cost systems in service sectors, such as higher education, and other service-oriented organizations or businesses. It advocates for the adoption of ABC, suggesting that it can offer more accurate financial data and facilitate improved decision-making regarding various activities. Additionally, the study provides valuable insights and recommendations for organizations considering similar implementations, based on the challenges encountered during the adoption of ABC. Ultimately, this research contributes to the management accounting literature by offering an ABC model that enhances understanding of its application across diverse contexts.

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Introduction

Like many other countries, Thai universities are now enjoying greater autonomy in higher education. This shift towards self-governance has granted universities more freedom in decision-making with minimal external interference, enabling them to establish their own policies for leadership recruitment, revenue generation, and budgeting (Jarernsiripornkul & Pandey, 2018). For example, university administrations are able to adapt swiftly to changing environments, particularly when facing stiff competition from both public and private sector institutions (Chaemchoy, Puthpongsiriporn, & Fry, 2021). In this context, universities are not bound by rigid structures but can adjust their frameworks to align with their strategic goals. However, as universities move towards greater autonomy and receive reduced government funding, they must seek alternative sources of income (Upping & Oliver, 2012). This shift introduces both new challenges and opportunities (Agasisti, Arnaboldi, & Azzone, 2008). To navigate this landscape, university administrations are encouraged to adopt a more entrepreneurial approach in decision-making and explore funding options beyond government support. Consequently, there is a growing demand for innovative accounting and budgeting practices to provide the financial information necessary for cost-benefit analysis and informed decision-making (Agasisti et al., 2008; Upping & Oliver, 2012).

Upping & Oliver (2011) observed that many public institutions have modified their costing processes in response to pressures from government and university administrations. They highlighted that the Thai government requires public agencies to align their management accounting practices with New Public Management (NPM) principles and adopt modern cost accounting techniques similar to those in the private sector. Additionally, university management needs enhanced cost information for effective planning and control, particularly in light of reduced government funding and increased self-management (Upping & Oliver, 2011). Similarly, Elias & Mehrotra (2018) underscored the need for contemporary approaches, arguing that traditional accounting reports in universities often lack the detail necessary for managers to accurately estimate service costs and optimise resource allocation.

In response to the financial management challenges faced by higher education institutions, ABC has emerged as an increasingly valued strategic tool for more effective cost management. ABC enables universities to allocate indirect costs with greater precision by identifying cost drivers and assigning costs based on actual activities, in contrast to traditional methods that often result in inaccurate cost allocations (Shuo, 2017). For example, in Australian universities, the adoption of ABC is influenced by factors such as organizational revenue and location, with larger institutions more likely to implement this costing method (Abeysekera & Sharma, 2023; Zhang, 2021). ABC offers detailed cost information that supports strategic planning and decision-making by pinpointing high-cost areas and non-value-adding activities (Mohd Zaini & Abu, 2023).

In practical applications, ABC has proven beneficial in various contexts. At the Royal University for Women, ABC has assisted library managers in optimizing resource allocation (Bazrafkan et al., 2021). In Iran, ABC was used to compare the costs of in-person versus virtual nursing education, demonstrating significant cost savings associated with virtual education (Elias & Mehrotra, 2018). Similarly, in Indonesia, ABC was employed to determine the optimal tuition fee for a private university, ensuring precise cost allocation (Leng, Rong, & Wang, 2022). In China, ABC facilitated the management and evaluation of campus activities, introducing a novel performance evaluation model (Sumrall, 2019). Additionally, ABC has been used to estimate the cost of producing international students, highlighting discrepancies between actual costs and fees and thereby aiding in improved financial planning (Elias & Mehrotra, 2018). In Malaysia, ABC helped examine academic staff's time capacity and waste costs, revealing unused capacity (Jaafar et al., 2017). In the Islamic Republic of Iran, ABC identified high costs associated with medical education, providing a strong case for rational financial management (Moradi et al., 2018). These studies collectively underscore the potential of ABC to enhance cost transparency in higher education, thereby supporting more informed strategic decision-making and efficient resource utilization. Notably, the insights gained from these applications are relevant not only to specific countries or regions but also hold global applicability for universities worldwide.

Building on previous research on ABC in Thailand, a variety of studies have analysed its use across different sectors, including Thai-listed companies (Chongruksut & Brooks, 2005), public and private Thai firms (Tupmongkol, 2008), and those with ISO 9001 certification (Intakhan, 2014). Case studies have also focused on sectors like utilities (Morakul & Wu, 2001), telecommunications (Kongchan, 2013), and chicken processing (Kabinlapat & Sutthachai, 2017). Despite this extensive research, ABC's application in Thai higher education remains limited. For instance, Upping & Oliver (2011) found that only 21% of Thai public universities had adopted ABC, with perceived benefits falling short of expectations (Terdpaopong, Visedsun, & Nitirojntanad, 2019). This indicates a gap in detailed implementation insights, as surveys often provide a general overview but lack depth (Abdul Majid & Sulaiman, 2008). Scholars, including Sorros, Karagiorgos, & Mpelesis (2017), have called for more case studies to explore ABC's application in educational institutions.

This study addresses the call for further research (Lestari & Mardiani, 2019; Sorros et al., 2017; Sumrall, 2019) by exploring ABC as a strategic tool for financing TEHEs. Specifically, it examines the implementation of ABC within a single faculty at a Thai academic unit. The study aims to address three key research questions: a) How feasible is implementing the ABC model in a higher education setting? b) What are the advantages and disadvantages of ABC compared to traditional costing methods? c) What primary challenges arise during its implementation? By investigating these issues, the study seeks to provide practical insights into adopting ABC effectively. The findings are expected to offer valuable guidance for higher education organisations looking to enhance their financial management and to inform other service-oriented businesses considering ABC. The paper is structured as follows: Section 2 reviews the relevant literature, Section 3 details the methodology, and Sections 4 and 5 present the research results, discussion, and conclusion.

Literature Review

ABC was developed by Johnson and Kaplan in the early 1980s, as outlined in their influential work (Johnson, 1987). ABC emerged as a more precise alternative to traditional costing methods, aiming to improve management accounting information (Berg & Madsen, 2020; Cooper & Kaplan, 1992; Kont & Jantson, 2011). Unlike traditional

methods that often rely on arbitrary measures like production volume, ABC allocates overhead costs based on the actual activities involved in producing a product or service (Drury, 2018; Rezaie, Ostadi, & Torabi, 2008). ABC is valued for its ability to accurately reflect cost behaviour and provide a detailed cost system (Berry, 2014; Elias & Mehrotra, 2018). By analysing cost drivers linked to specific activities, ABC enhances the precision of cost calculations, identifies value-added components, reduces waste, and supports more effective cost control (Zhang, 2021).

Originally, ABC was designed to improve the accuracy of product and service costing, aiding in pricing and decision-making. It soon became clear that ABC could also drive continuous improvement by helping managers understand how their activities impact costs, leading to better cost management and strategic planning (Maiga & Jacobs, 2005). Over time, ABC evolved from a technical tool into a broader management philosophy with significant strategic implications (Berg & Madsen, 2020; Cinquini & Tenucci, 2010; Jones & Dugdale, 2002). Today, it is recognised as a transformative system that enhances cost accuracy and provides a comprehensive view of business operations (Ibrahim, El Sibai, & El Din, 2021).

In practice, ABC is mainly utilised in the manufacturing industry and has demonstrated effectiveness in various cases (Mitchell, 1996). It is seen as a performance-enhancing tool for companies (Maiga, 2014). Maiga & Jacobs (2005) found that implementing ABC improved profitability by enhancing operational performance, allowing managers to leverage both ABC and operational metrics to achieve financial success. Service organisations also benefit from ABC principles (Krishnan, 2006), leading to its adoption across diverse sectors, including manufacturing, commerce, profit-driven enterprises, and government bodies (Rezaie et al., 2008). In university administration, ABC improves transparency and helps management better understand the relationship between expenditures and activities. It allows universities to analyse the resources used by different cost centres and the procedures involved in providing services to students (Azizi Ismail, 2010). The effectiveness of ABC in higher education is debated. While some studies highlight its benefits, others question its necessity, arguing that precise costing might be redundant if universities struggle to justify tuition fees. Azizi Ismail (2010) noted that traditional practices in public universities often fail to clarify the costs associated with different services and student types. Critics suggest that ABC may offer little advantage if financial success is primarily measured by comparing actual results with budgets, given that most costs are pre-committed. However, proponents like Cropper & Cook (2000) and Goddard & Ooi (1998) argue that ABC provides valuable information for planning and decision-making, improving efficiency by identifying high-cost activities and aiding in accurate forecasting (Elias & Mehrotra, 2018).

ABC improves management's understanding of cost behaviour and performance measurement(Hashim, 2013; Kont & Jantson, 2011). However, previous research highlights challenges in effectively implementing ABC, such as identifying key cost-driving activities and developing supportive information systems (Goddard & Ooi, 1998). These challenges are often easier to address in manufacturing than in higher education settings (Berry, 2014). Universities may struggle with the detailed cost information needed for ABC to be effective. Broad & Crowther (2001) suggest that further research is needed to assess ABC's suitability for higher education. Sorros et al. (2017) found that while Greek educational institutions recognised the benefits of ABC, they faced difficulties with its complex, costly implementation and the need for skilled personnel. Despite these challenges, ABC has the potential to significantly enhance cost management and decision-making in educational organisations by improving cost data quality and supporting better resource allocation and budgeting (Kont & Jantson, 2011). ABC improves the quality of cost data, aiding universities in identifying poor performance and enhancing financial and strategic management. It fosters accountability and transparency by clearly showing resource use and costs. However, challenges such as resistance to change, extensive training, and system compatibility issues must be addressed. A well-planned implementation, including prototype testing and leadership support, is crucial for successful adoption.

Methodology

To evaluate the feasibility of applying ABC in a university context, a case study approach was selected for its depth of insight. This study employs a single case study to apply ABC for estimating costs of undergraduate programs within the Faculty of XYZ at an autonomous university in Thailand. Focusing on the faculty level is essential because decisions made here significantly affect overall university costs (Azizi Ismail, 2010) and each faculty operates with unique characteristics (Lestari & Mardiani, 2019). Additionally, the faculty's accounting system is more manageable compared to the broader university system, which encompasses various units beyond teaching and learning (Granof, Platt, & Vaysman, 2000).

The Faculty of XYZ provides education across three levels: bachelor's, master's, and doctoral degrees. It employs over 50 instructors and 40 staff members and has a student enrolment of approximately 2,500, comprising both undergraduates and postgraduates. The faculty's primary mission is to deliver undergraduate education that meets established qualification criteria, aligning with the operations of many similar faculties. Consequently, this study focuses on analysing costs associated with undergraduate education. Data for this analysis are derived from the faculty's financial reports and expenditures for the fiscal year 2020. Specifically, historical financial statements, including annual expenditure records, budgets, and detailed staff information, provide insights into the total costs incurred for undergraduate education. Additional data are obtained from the human resources, finance and accounting, and educational administration departments, including staff assignments, faculty charts, staffing data, and official communications. This comprehensive data collection helps identify the operations involved in undergraduate education, which are then correlated with relevant expenses and cost drivers to develop an ABC model.

The Faculty of XYZ does not produce physical goods but instead offers courses, curricula, and various academic services. In this context, the focus of cost analysis is on six bachelor's degree programmes: Finance, Marketing, Management, Hospitality and Event Management, Tourism Management, and Accounting. Figure 1 provides an overview of the ABC model used by XYZ to allocate costs to these programmes. The process begins by tracing direct costs to each individual programme. Indirect costs are grouped into cost pools and assigned to activities based on cause-and-effect relationships. Some indirect costs can be directly allocated to specific activities, while others are distributed across activities in the initial allocation stage. These activities are then allocated to the relevant cost objects in the second stage (Garrison et al., 2015; Horngren, 2009). Potential challenges encountered during the implementation of ABC are discussed in the following section.

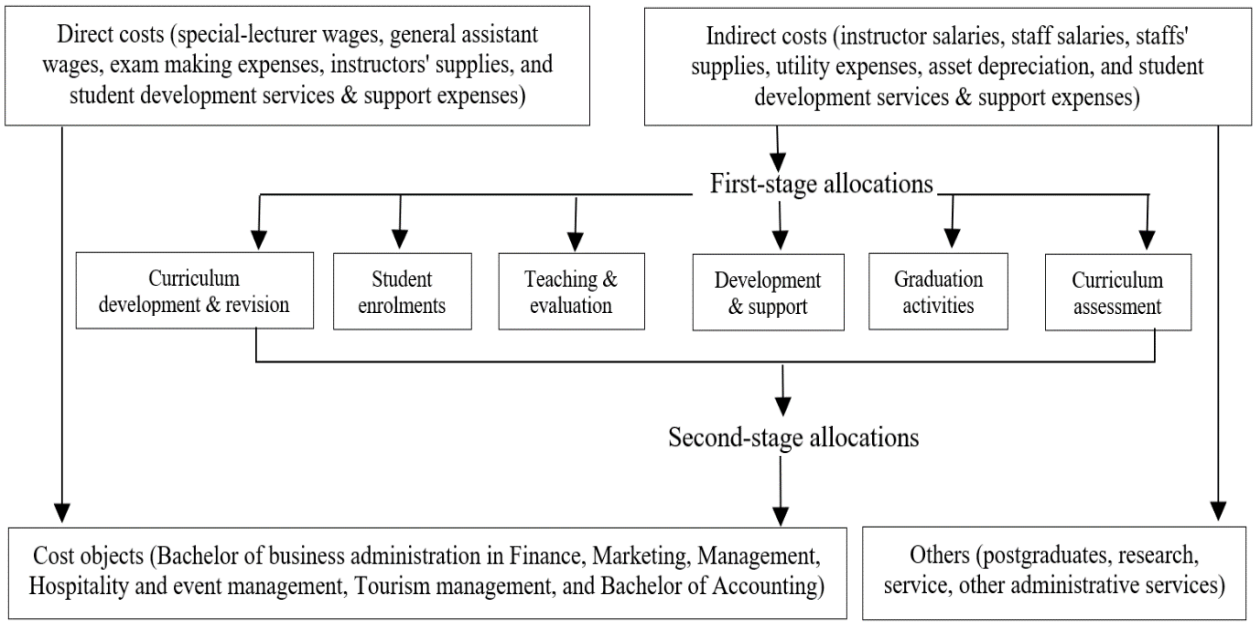

Figure 1: The Proposed ABC Model (Drury, 2018) and Garrison et al. (2015).

Analysis and Results

Calculating the total cost of education is inherently complex, partly due to the difficulty of attributing costs exclusively to educational activities (Pham & Tran-Nam, 2021). As a result, expenses not directly related to undergraduate education—such as those associated with research, academic services, and administrative functions—were excluded from this study's data analysis. To implement the proposed ABC model, we followed a six-stage process adapted from Horngren (2009); Tatikonda & Tatikonda (2001), and Garrison et al. (2015). The steps for applying the ABC model are outlined as follows:

Step 1: Identify the Chosen Cost Objects

Selecting cost objects is not governed by a universal rule; it varies based on the objectives of the study (Hashim, 2013). In this study, we aim to develop an ABC model at the faculty level to determine the costs associated with undergraduate programs at Faculty XYZ. Accordingly, the chosen cost objects are six bachelor's degree programs: Finance, Marketing, Hospitality and Event Management, Management, Tourism Management, and Accounting. ABC posits that these programs drive the need for various activities, which, in turn, require resources. Therefore, the curricula drive activities, and activities consume resources.

Step 2: Identify the Direct Costs of the Curriculum

Expense accounts for undergraduate curricula are divided into direct and indirect costs. Direct costs are assigned directly to each curriculum, while indirect costs are allocated through the ABC process. Table 1 shows the detailed breakdown of these costs. For consistency with other studies, costs are converted from Thai Baht (THB) to US dollars (USD) using the exchange rate from the Central Bank of Thailand at the time of the study (THB 30 = USD 1). As indicated in Table 1, indirect costs ($1,462,709.37) make up over 90% of the total expenditure ($1,633,836.24). Given the significant proportion of indirect costs, relying on a single cost driver could lead to inaccurate cost distribution. Oseifuah (2014) highlighted that ABC is particularly useful for organizations with substantial indirect and support costs. The largest portion of educational costs is faculty salaries, with full-time lecturers' salaries representing 57.11% and staff salaries 15.64% of total student education costs. Special lecturers' wages make up just 1.81%. Additionally, asset depreciation and student development services account for 10.40% and 8.17% of the total costs, respectively.

Table 1: Expense Accounts Classified into Direct and Indirect Costs (Unit: USD).

Expense Accounts	Direct Costs	Indirect Costs	Total Costs	Percentage
Instructor Salaries & Other Payments	10,094.67	933,016.69	933,016.69	57.11%
General-Assistant Wages			10,094.67	0.62%
Special Lecturers & Other Payments	29,545.29	255,516.83	29,545.29	1.81%
Exam Marking Exp.	736.65		736.65	0.05%
Staff Salaries & Other Payments	8,250.26		255,516.83	15.64%
Instructors & Staffs' Supplies		13,298.09	21,548.35	1.32%
Utility Exp.		79,996.82	79,996.82	4.90%
Asset Depreciation	122,500.00	169,890.33	169,890.33	10.40%
Student Development Services & Support Exp.		10,990.61	133,490.61	8.17%
Total Costs	**171,126.87**	**1,462,709.37**	**1,633,836.24**	**100.00%**

Table 2 outlines the allocation of direct expenses to the six bachelor's degree programs within Faculty XYZ. The total direct costs amount to $171,126.87 and are assigned to each program based on their specific resource usage.

These direct costs include general assistant wages, special lecturer wages, exam marking expenses, instructor supplies, and student development costs. For example, the Finance program incurs $28,994.95 in direct costs, comprising $1,866.67 for general assistant wages and $3,330.00 for special lecturer wages, among other expenses. The Marketing program's direct costs total $32,290.74, with major allocations for special lecturer wages ($4,851.63) and student development expenses ($23,400.00). This detailed breakdown highlights the varying financial requirements of each program, reflecting their distinct operational demands. Accurate tracing of these direct costs is essential for the effective implementation of the Activity-Based Costing (ABC) model, as it sets the stage for the precise allocation of indirect costs in later stages.

Table 2: Demonstrates the Cost Objects Corresponding to the Expenses (Unit: USD).

Direct Costs	Total Costs	Fin	MK	Event	Mgt	Tour	ACC
General Assistant	10,094.67	1,866.67	2,228.00	1,000.00	1,866.67	933.33	2,200.00
Special Lecturers	29,545.29	3,330.00	4,851.63	3,446.77	8,428.33	3,450.00	6,038.55
Exam Marking	736.65	111.96	125.74	94.56	172.51	98.65	133.23
Instructors' Supplies	8,250.26	1,086.33	1,685.36	2,420.95	1,796.52	300.53	960.57
Student Development	122,500.00	22,600.00	23,400.00	15,750.00	22,500.00	19,950.00	18,300.00
Total Costs	**171,126.87**	**28,994.95**	**32,290.74**	**22,712.28**	**34,764.03**	**24,732.52**	**27,632.36**

Step 3: Illustrates the Allocation of Costs

A key step in implementing an ABC system is defining the activities involved. At Faculty XYZ, the activities associated with undergraduate education are closely interconnected. Six activity cost pools have been identified: (1) curriculum development and revision, (2) student enrolments, (3) teaching and student evaluation, (4) student development services and support, (5) graduation activities, and (6) curriculum assessment. Indirect costs from the previous step are allocated to these activities using various resource drivers (first-stage allocation). However, the total indirect costs of $1,462,709.37 do not match the sum allocated in the first stage. This discrepancy arises because $184,382.30, which includes instructor salaries and other payments ($139,952.52) and utility and asset depreciation expenses ($44,429.88), was excluded as these costs are not exclusively associated with the undergraduate curriculum. Instructor salaries and other payments are not fully attributable to the undergraduate curriculum alone. Academic staff typically divide their time among teaching, research, and various duties. It is generally accepted that a standard academic workload is 35 hours per week, with teaching constituting at least 70% of this time, research 10-20%, and academic services 5-10%. As Berry (2014) observed, measuring academic staff hours can be difficult due to the flexibility of their schedules and diverse activities. To address this, we used a workload proportion as a resource driver, allocating 85% of all workloads (£793,064.18) to the undergraduate curriculum. Therefore, 15% of full-time instructor salaries and other payments (£139,952.52) were excluded from the cost allocation. Likewise, utility expenses and asset depreciation are apportioned across undergraduate, postgraduate, and administrative services based on their consumption. Room utilisation records indicated that utility and asset depreciation expenses were distributed as follows: undergraduate programmes (£205,457.26), postgraduate programmes (£14,223.42), and administrative services (£30,206.46). This resulted in excluding a total of £44,429.88 from the undergraduate cost calculation.

The total indirect costs allocated to the six activities amount to $1,278,326.97, using resource drivers like direct costs, workload proportions, and usage time. For instance, 85% of instructor salaries ($793,064.18) are assigned to teaching and student evaluation. Student development expenses ($10,990.61) are distributed according to their purpose, as noted in finance records. Utility and depreciation costs are allocated based on room usage data. Staff salaries are allocated according to workload proportions outlined in job descriptions, as the institution lacks precise time-tracking systems. This method is used due to the difficulty of achieving precise measurements, as noted by Tatikonda & Tatikonda (2001). Table 3 shows that teaching and student evaluation is the highest activity cost at $1,134,195.19, followed by student development services and support at $118,590.65. Other costs include graduation activities ($10,620.27), student enrolments ($8,945.51), curriculum assessment ($3,153.19), and curriculum development and revision ($2,822.17). Faculty and university officials can use these figures to evaluate and improve the performance of activities at the faculty level.

Table 3: The Allocation of Indirect Costs to Activity Cost Pools (Unit: USD).

Indirect Costs	Total	Driver	(1)	(2)	(3)	(4)	(5)	(6)
Instructors	933,016.69	Direct	2,369.15	3,860.83	793,064.18	99,539.25		
Staffs	255,516.83	Workload			139,147.87		8,072.65	2,527.09
Staffs' Supplies	13,298.09	Workload	123.30	200.93	7,241.79	5,180.41	420.13	131.52
Student Development	10,990.61	Direct	105.55	3,400.00	62,342.90	6,452.27	1,138.33	158.32
Utility Exp.	79,996.82	Usage time		474.99		2,374.97	316.66	
Asset Depreciation	169,890.33	Usage time	224.17	1,008.75	132,398.45	5,043.75	672.50	336.25
Total	**1,462,709.37**	**1,278,326.97**	**2,822.17**	**8,945.51**	**1,134,195.19**	**118,590.65**	**10,620.27**	**3,153.18**
Percentage			**0.22%**	**0.70%**	**88.72%**	**9.28%**	**0.83%**	**0.25%**

Notes: (1) Curriculum Development and Revision, (2) Student Enrolments, (3) Teaching and Student Evaluation, (4) Student Development Services and Support, (5) Graduation Activities, and (6) Curriculum Assessment.

Step 4: Determine the Cost Drivers and Activity Rates

A cost driver quantifies activity consumption related to a cost object in the second-stage allocations, and selecting the appropriate number is essential to maintain accuracy and avoid unnecessary complexity. This study employs four primary cost drivers: number of curriculums, enrolled students, registered students, and graduates. Table 4 outlines the six calculated activity rates. Activity rates are derived by dividing total activity costs by the corresponding cost drivers. For example, the cost of curriculum development and revision ($2,822.17) is spread over six curriculums, resulting in a rate of $470.36 per curriculum. Student enrolments cost $8,945.51 and are divided among 640 students, yielding a rate of $13.98 per student. Teaching and student evaluation, with the highest cost of $1,134,195.19, is allocated to 2,338 students, resulting in $485.11 per student. Student development services and support ($118,590.65) also divide among 2,338 students, equating to $50.72 per student. Graduation activities cost $10,620.27 and are distributed over 457 graduates, resulting in $23.24 per graduate. Curriculum assessment costs $3,153.19, distributed over six curriculums, yielding $525.53 per curriculum. These rates ensure a precise and transparent allocation of indirect costs within the ABC model.

Table 4: Activity Rate Calculation (Unit: USD).

Cost Drivers/ Activity Cost Pools	(1)	(2)	(3)	(4)	(5)	(6)
Total Activity Costs	2,822.17	8,945.51	1,134,195.19	118,590.65	10,620.27	3,153.19
Cost Drivers:						
No. of Curriculums	6					
No. of Enrolled Students		640				
No. of Registered Students			2,338			
No. of Registered Students				2,338		
No. of Graduates					457	
No. of Curriculums						6
Activity Rates ($ Per Unit Cost Driver)	470.36	13.98	485.11	50.72	23.24	525.53

Step 5: Assign Indirect Costs to Cost Objects Using Activity Rates

In the allocation of activity costs to cost objects, activity rates from the previous stage are utilised. Table 5 demonstrates how indirect costs are distributed across the six undergraduate programmes at Faculty XYZ using the activity rates calculated in Table 4. Indirect costs for each curriculum are determined by multiplying the activity rates by the respective cost drivers. For instance, the Finance curriculum is allocated indirect costs of $470.36 for curriculum development and revision, $1,719.21 for student enrolments, $208,598.77 for teaching and student evaluation, $21,810.94 for student development and support, $1,742.93 for graduation activities, and $525.53 for curriculum assessment, summing to a total indirect cost of $234,867.75. Similarly, the Marketing curriculum's total indirect costs amount to $251,534.60, while the Hospitality and Event Management curriculum's indirect costs total $163,196.81. The Management, Tourism Management, and Accounting programmes incur total indirect costs of $227,388.94, $208,947.03, and $192,391.84, respectively. This detailed allocation process ensures that each curriculum absorbs its proportionate share of indirect costs based on actual resource utilisation, thereby enhancing the precision and transparency of cost reporting within the ABC model.

Table 5: Assigning the Activity Cost Pools to Cost Objects (Unit: USD).

Cost Objects	Total Costs	(1)	(2)	(3)	(4)	(5)	(6)
Fin	234,867.75	470.36	1,719.21	208,598.77	21,810.94	1,742.93	525.53
MK	251,534.60	470.36	1,775.12	223,637.29	23,383.36	1,742.93	525.53
Event	163,196.81	470.36	1,034.32	144,563.80	15,115.49	1,487.30	525.53
Mgt	227,388.94	470.36	1,579.44	201,807.19	21,100.82	1,905.61	525.53
Tour	208,947.03	470.36	1,425.69	185,313.33	19,376.23	1,835.89	525.53
ACC	192,391.84	470.36	1,411.71	170,274.81	17,803.81	1,905.61	525.53
Total	**1,278,326.97**	**2,822.17**	**8,945.51**	**1,134,195.19**	**118,590.65**	**10,620.27**	**3,153.19**
Percentage		**0.22%**	**0.70%**	**88.72%**	**9.28%**	**0.83%**	**0.25%**

Step 6: Prepare a Management Report

Finally, we compare the costs of each curriculum using the traditional method and the ABC model. The traditional method allocates costs uniformly across curriculums, while the ABC model offers a more precise allocation based on actual resource consumption. Table 6 contrasts the total costs of each undergraduate curriculum at Faculty XYZ as determined by the ABC model with those calculated using the traditional costing model. The ABC model offers a detailed allocation based on specific activities and actual resource usage. For example, the Finance curriculum costs $263,862.69 under the ABC model, comprising $28,994.95 in direct costs and $234,867.74 in indirect costs. In comparison, the traditional model assigns a uniform cost of $272,306.04 to each curriculum, assuming equal resource consumption. The ABC model generally shows lower costs for most programs, such as Hospitality and Event Management ($185,909.08) and Tourism Management ($233,679.55), compared to the traditional model. The only exception is the Marketing curriculum, where the ABC model ($283,825.33) results in a slightly higher cost. These differences highlight the limitations of the traditional model and demonstrate the ABC model's superior accuracy in reflecting the true cost of each program.

Table 6: Cost Comparison Between ABC and Traditional Models (Unit: USD).

ABC Model:	Fin	MK	Event	Mgt	Tour	ACC
Direct Costs ($171,126.87)	28,994.95	32,290.74	22,712.28	34,764.03	24,732.52	27,632.36
Indirect Costs Assigned to the Undergraduate Curriculums ($1,278,326.97)						
Curriculum Development & Revision	470.36	470.36	470.36	470.36	470.36	470.36
Student Enrolments	1,719.21	1,775.12	1,034.32	1,579.44	1,425.69	1,411.71
Teaching and Student Evaluation	208,598.77	223,637.29	144,563.80	201,807.19	185,313.33	170,274.81
Student Development and Support	21,810.94	23,383.36	15,115.49	21,100.82	19,376.23	17,803.81
Graduation Activities	1,742.93	1,742.93	1,487.30	1,905.61	1,835.89	1,905.61
Curriculum Assessment	525.53	525.53	525.53	525.53	525.53	525.53
Total Indirect Costs	234,867.74	251,534.59	163,196.80	227,388.95	208,947.03	192,391.83
Notes: Indirect Costs Not Assigned to the Undergraduate Curriculums ($184,382.40)						
Total Costs ($1,449,453.84)						
Traditional Model:	263,862.69	283,825.33	185,909.08	262,152.98	233,679.55	220,024.19
Basis Allocation: No. of Curriculums						
Total Costs ($1,633,836.24)	272,306.04	272,306.04	272,306.04	272,306.04	272,306.04	272,306.04

Berry (2014) identifies four main barriers to implementing ABC in universities: financial, technological, cultural, and informational. In this study, the most significant challenge was the informational barrier. For instance, the widely used 85-10-5 employment contract method for allocating instructor salaries struggles with accurately reflecting the actual time spent on various tasks, as academics often work flexible schedules (Abdul Majid & Sulaiman, 2008). To mitigate this, we streamlined the ABC implementation by using position descriptions and grouping sub-activities. Future research should investigate more refined approaches to overcome these informational challenges, such as incorporating time-tracking systems or developing detailed activity logs. Additionally, enhancing faculty training on ABC and involving them in the development of ABC processes could improve accuracy and acceptance. Advanced data analytics and machine learning might also offer new ways to predict and analyse academic activities and costs more effectively.

Applying ABC in higher education can significantly improve management decisions, similar to its benefits in other sectors (Hashim, 2013). Given the complexity of higher education activities—ranging from teaching and research to student services and administration—ABC is particularly valuable for providing precise cost information that supports better decision-making. Based on the findings of this study, we recommend simplifying the ABC implementation process outlined in the proposed model Figure 1. Simplification is essential for making the model accessible and practical for widespread use within the faculty, thereby reducing implementation barriers. Faculty XYZ should start by applying ABC in its initial phase and consider integrating activity-based budgeting (ABB) to enhance financial planning and control. This approach will ensure that budgets align accurately with resource usage, optimizing fund allocation through both ABB and ABC. ABB should involve identifying sub-processes within the six key segments and linking payments to the payroll system. This detailed tracking will improve cost estimates and offer insights into resource use across academic and administrative tasks.

Additionally, the management team should assess how strategic ABC aligns with the institution's goals. It is important to implement ABC not just as a cost control tool but as a means to advance educational processes, research initiatives, and student success. The capability of information systems to support ABC should also be evaluated, as accurate, up-to-date data is crucial for its success. Emerging technologies and trends, such as big data, could further enhance the effectiveness of ABC and ABB models (Berg & Madsen, 2020). Integrating big data analytics into ABC can enhance cost allocation accuracy by processing large volumes of information and improving the identification of cost drivers. Predictive analytics can also help forecast future costs and guide financial decisions. As higher education evolves, adopting these technologies will be crucial for achieving ABC and ABB objectives. Future research should explore how ABC implementation impacts institutional performance, including cost efficiency, academic quality, and stakeholder satisfaction. This research should involve long-term, detailed data collection and comparison with other costing approaches to further demonstrate ABC's benefits and refine its application.

Discussion and Conclusion

This study introduces an ABC model and outlines its application at the faculty level in a Thai autonomous university. Currently, Faculty XYZ is in the planning and decision phase for implementing ABC. Following Abdul Majid & Sulaiman (2008) recommendation, conducting a pilot project is a crucial step to assess the feasibility and uncover potential challenges before full-scale implementation. Many higher education institutions traditionally compare budgeted versus actual expenses to evaluate financial performance, often missing the true costs of various activities and disciplines (Azizi Ismail, 2010). ABC provides a clearer understanding of the costs associated with different curricula, helping management and curriculum committees better grasp the opportunity costs involved in undergraduate education activities.

The study highlights notable differences in cost allocation between the ABC model and traditional costing methods. ABC offers a fair and transparent approach by allocating costs based on each curriculum's actual resource use (Goddard & Ooi, 1998). The research emphasizes the necessity of adopting advanced costing methods, particularly in contexts with high indirect and fixed costs. An effective cost system, like ABC, provides detailed cost information crucial for informed decision-making. When applied in higher education, ABC can improve financial management, cost distribution, and decision-making processes, thereby enhancing resource management and educational quality. The ABC model proposed in this study offers practical insights for Faculty XYZ and other institutions, demonstrating its broad applicability to universities and government agencies. It also illustrates

that ABC delivers more accurate cost drivers than traditional methods, aligning with institutional strategies for sustainable cost management. This study enriches the literature on financial management in higher education and advocates for the implementation of ABC to support strategic goals and foster long-term success. This study has several limitations. Firstly, the data were collected for only one year, assuming consistent teaching costs throughout a student's degree, which may not fully reflect total costs. Secondly, ABC was applied only at the faculty level, excluding broader university-wide costs such as those for the central library and service centres. Lastly, the findings are based on a single case study from a Thai university, limiting generalizability. Future research could replicate this study in other institutions both within Thailand and internationally to assess the broader applicability of the results.

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