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Comparative Studies of Value Management Practice on Facilities Management Structure Among Malaysia Higher Education Institution

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Abstract

This study explores the implementation of Value Management (VM) in the facilities management (FM) structures of two Malaysian higher education institutions: Universiti Teknologi Malaysia (UTM) and Universiti Teknikal Malaysia Melaka (UTeM). The research evaluates the extent to which VM principles are integrated into FM practices and examines their impact on institutional operations. Findings reveal that UTeM demonstrates a higher level of VM adoption (14/19), highlighting its proactive approach to operational excellence, while UTM, with a score of 10/19, shows moderate implementation, hindered by a decentralized structure. Despite differences in organizational approaches, both universities aim to enhance resource utilization and financial sustainability. The study emphasizes the need for clear communication, alignment of strategies, and comprehensive VM frameworks to optimize facilities management in higher education institutions. The results offer insights into best practices and areas for improvement in the application of VM within FM practices.

1. Introduction

VM involves ensuring that FM can achieve the objectives and goals of the organisation. It also plays an important role in ensuring that FM services support the business organisation. Furthermore, Jensen (2009) recommends the application of both FM and VM in the early stages of a project and throughout a building's entire life cycle. Other than that, facilities management (FM) is a field dedicated to ensuring the usefulness, comfort, safety, sustainability, and efficiency of the built environment in buildings and surrounding infrastructure. According to Chotipanich (2004), facilities management offers a wide range of services, encompassing various tasks and responsibilities performed by professionals.

Involving the management of non-core business processes, such as workplace safety and health, real estate management, administrative services, space management, and maintenance operations, facilities management aims to align an organisation's goals and mission with its objectives. Facility professionals often perceive facility management as an undervalued profession, recognised only during emergencies or work disruptions. This

perception can lower their morale and impede their ability to contribute value to their organisations, potentially affecting overall performance.

VM serves as a strategic approach to enhance FM services by promoting ethical practices and challenging outdated stereotypes. Its primary objective is to transform FM into a strategic asset, enabling organisations to better understand the value of FM services, prioritise resources, make informed decisions, improve user experiences, and foster professional pride within the industry. By emphasising ethical approaches, VM seeks to establish FM as a credible business advantage, essential for success in today's competitive environment.

In Malaysia, the significance of integrating VM into FM is underscored by the continuous utilisation of buildings and the imperative to avoid mediocrity in facility operations. Professionals such as architects, engineers, designers, and tenants significantly influence building value, with the potential to save time, money, and effort through effective FM practices. FM encompasses various domains, including construction, contract management, change management, human resource management, financial management, occupational health and safety management, property maintenance, and services like cleaning and security. A comprehensive understanding of FM's scope is crucial for delivering sustainability and meeting client requirements, as highlighted by Isa (2017).

The longevity of buildings necessitates early planning for efficient and cost-effective operation and maintenance. Early involvement of FM professionals during the design and construction phases can lead to better design decisions, improved sustainability, and reduced lifecycle costs, as noted by RFM Group. Conversely, the absence of FM input in the early stages can result in the misuse of construction materials and equipment, leading to increased maintenance costs and operational inefficiencies. Therefore, incorporating FM considerations from the outset is vital to optimising the total value of space and ensuring the long-term success of facilities.

In conclusion, the application of VM in Facilities Management is crucial for organisations seeking to improve operational efficiency, sustainability, and strategic alignment. In the Malaysian context, where building utilisation is intensive, the early involvement of FM professionals in the design and construction phases is particularly crucial. By challenging outdated stereotypes and promoting ethical practices, VM not only improves the value of FM services but also elevates the industry's professional standing, making it a vital component of organisational success in a competitive business environment.

According to Enoma (2005), FM practitioners need to focus on creating a cost-effective and efficient facility while handling daily tasks and unforeseen issues during the design phase. While VM is important, focusing too much on cost-cutting measures can result in insufficient funds for necessary renovations and maintenance, leading to a decline in facility quality. Furthermore, prioritising financial measures over the needs of end users can lead to dissatisfaction. Alexander (2003) mentioned that senior managers are emphasising cost-effective facility management due to the global economic crisis, resulting in tighter budgets. In response, facility managers need to find ways to deliver value with limited resources.

In addition, according to Mustapha (2013), this emphasis on cost-effectiveness has led to a lack of communication between operational teams and management, requiring strategic decision-making and attention from the management team. Inadequate communication among FM practitioners may lead to inefficiencies and misalignment in VM activities and organisational strategy. Insufficient communication can result in teams or departments pursuing conflicting goals, and the organisation may miss out on leveraging task synergies, leading to lower overall performance. Furthermore, FM practitioners may struggle to make well-informed decisions, which can impact organisational efficiency and effectiveness.

Operational inefficiencies may arise due to a lack of communication, as the operational team may not receive timely updates on changes in priorities, policies, or procedures. Additionally, when operational staff feel disconnected, it can lead to decreased morale, lower engagement, frustration, and undervaluation, resulting in decreased productivity and higher turnover rates. This emphasises the need for effective communication and training. Furthermore, a communication gap can hinder the timely identification and resolution of issues, causing minor problems to escalate into major ones. Hence, it is critical to promote excellent communication and alignment among FM practitioners.

Moreover, the lack of clear policy guidance on VM within the facility management team can lead to confusion. FM practitioners often overlook opportunities without guidelines, leading to missed value potential and confusion when these missed opportunities become apparent later. According to NHS Estates (2001), overlapping authority is often related to conflict. For instance, the ward housekeeping models demonstrate that housekeepers commonly report to different departments due to overlapping job scopes. Additionally, without clear VM guidelines, it is challenging to measure and demonstrate the value of FM practitioners, making it difficult to justify expenditures and investments to stakeholders.

Lack of guidance among FM practitioners can lead to uncertainty, frustration, and reduced morale, which in turn reduces engagement and hinders the organisation's goals. Ambiguous policies can lead to misunderstandings and conflicts, and differing interpretations of value can hinder collaboration and result in disagreements within the team. Therefore, VM policies are crucial for the FM team to effectively adapt to changes and challenges, ensuring an effective response to new demands or organisational priorities.

Thus this research is aimed to focus on examining the value-level practice of FM structure among Higher Education Institutions and analysing the impact of practice towards Higher Education Institution Operation. Two universities were involved in this study i.e UTM, and UTEM. University Teknikal Malaysia Melaka (UTeM), located within Melaka's UNESCO Heritage Site. UTeM has two campuses: Hang Tuah Jaya and the Technology campus near Ayer Keroh. For this study, the researcher has chosen the main campus, Hang Tuah Jaya, situated in Durian Tunggal, Malacca, Malaysia. Lastly, Universiti Teknologi Malaysia (UTM) is in Skudai, Johor, Malaysia. The purpose of this study is to compare whether the three organisations in the universities apply value-based elements in accordance with their set strategic plans. The respondents of this study include the chief executives of the two universities.

2. Literature Review

A summary provides a brief overview of a source's key information, while a synthesis involves reorganising or rearranging material. The purpose of a literature review is to identify any gaps in knowledge and understand theoretical and conceptual frameworks. Furthermore, the literature review is the outcome of the researcher's examination, search, and referencing of materials related to VM objectives, VM components, and FM strategy components.

2.1 VM in FM

The concept of VM is a crucial tool in FM for maintaining an organisation’s value and meeting client demands. According to Green and Moss (2000), VM is an effective approach for understanding client requirements and aligning stakeholders’ objectives to achieve building functions. VM is crucial in providing fundamental steps for new facility practitioners to enhance their facility management expertise. In addition, by incorporating this concept, facilities management can direct attention to the organisation’s core business and mitigate the risk of losses.

2.2 FM Strategy Component

2.2.1 Strategic Analysis

The strategic analysis of implementation involves FM practitioners reviewing resources, processes, and systems to assess the current provision of services in organisations. This includes providing a detailed breakdown of cost analysis. For instance, it involves using benchmarking and market trends to analyse data of services and conducting a market audit of the organisation.

2.2.2 Devloping Solutions

After collecting the data, facility management practitioners can analyse the data to generate and evaluate options for providing solutions. New innovations and implementations can be sourced through outsourced modelling and sensitivity analysis.

2.2.3 Strategy Implementation

After establishment, policy statements should be converted into operational plans and implemented through a change management process capable of managing change effectively. For example, FM practitioners utilise market testing or benchmarking as tools.

2.3 VM Component

2.3.1 Identify Value

This phase focuses on overseeing the essential operations of an organisation by effectively managing the inventory of system and facility services. Typically, building services, installations, and support are provided on-site, highlighting the importance of system and facility service inventory management. Evaluating facilities helps assess the performance of systems and equipment and take necessary corrective action. Facilities management can offer a competitive advantage and hold strategic importance, as organisations often need to invest in facilities to support their business operations, particularly in areas where suitable locations are scarce and the costs are high.

An efficient corporate organisation provides direction and structure to a company's operations. Facility management encompasses planning, organising, directing, measuring, and controlling. To be a part of the business strategy, it should operate with an entrepreneurial mindset. Key strategies for maintaining relevance and

competitiveness include innovation, quality, productivity, and safety. Gathering data and expertise helps organisations understand their goals and objectives.

Kruse (1995) highlights the importance of discussing facility life cycles within organisations to provide effective data on managing facilities. Understanding facility life cycles is crucial for making long-term decisions. Implementing life cycle costing programs enables facility managers to align maintenance expenses with budgets. This approach emphasises preventative maintenance and ensures that assets continue to perform efficiently over time.

Facilities management is crucial for companies because the assets can deteriorate over time, leading to consequences such as asset depreciation, business disruptions, operational waste, and occupational health risks. A facility condition survey assesses and reports on the condition of facilities, corrects those that fall below standards, and establishes a knowledge base. FM practitioners play an important role in conducting regular surveys to inform organisations about the expected lifespan of a facility. They use methods such as visual and audio inspections, simple tests, and specialist non-destructive testing.

According to Kincaid (1994), the scope of FM is outlined in the proposed framework, covering various aspects of management practice as a support role or service for the organisation's non-core business and meeting the needs of primary activities or core business. Understanding the scope of facilities management is crucial for FM practitioners to have a clear understanding of their responsibilities towards organisational services. For example, FM practitioners must conduct regular inspections of the building to prevent accidents or collapses and identify potential structural issues, such as foundation problems or roof instability.

According to Atkin and Brooks (2000), facility management (FM) encompasses a wide range of services, including financial management, real estate management, human resources, health and safety, and change management. The main goal of FM strategy is to improve operational efficiency in organisations by prioritising maintenance tasks and services to prevent unexpected facility failures, incidents, or breakdowns.

Facility-based financial analysis involves Total Cost Analysis (TCA) and Life Cycle Costing (LCC) in an organisation. TCA plays a crucial role in analysing maintenance costs and serves as a tool for understanding the long-term impact of purchasing decisions. On the other hand, LCC is used to convince management of higher-priced options.

Implementing energy-saving measures is one of the strategies that FM practitioners within an organisation should apply to minimise expenses. This can include ensuring that lights are active only when an area is occupied and upgrading to LED lighting to reduce utility bills.

2.3.2 Sustain Value

As per IFMA 2007, one key area for FM professionals to focus on is sustainability. Building capabilities in sustainability will help organisations seize the opportunities and overcome challenges presented by sustainable development and practices. Organisational values provide a strong framework for long-term success, guiding strategic planning, growth activities, and the development of new projects.

Profit leaks are like a bucket full of holes, often caused by carelessness or poor facility management. These leaks can lead to business disruptions and financial losses. It's crucial for facility management practitioners to take proactive measures to prevent profit leaks. They should be aware of the potential causes of profit leaks and be prepared to handle any emergencies.

Bain & Co.'s annual report emphasises the significance of an organisation's mission statement as a widely used managerial tool. These elements need to be applied within the organisation to motivate FM practitioners to achieve success and foster a mindset for business growth. A clear mission and objectives are crucial for strategic performance in facilities management, making it a vital tool for success.

Facilities will deteriorate and change over time, so they must be properly managed. The primary goal of implementing preventive measures is to maintain the facilities' optimal operation, maximum efficiency, and alignment with their anticipated useful life (AUL).

Facility systems and equipment for emergency preparedness must comply with relevant acts and regulations. Facilities management practitioners are responsible for ensuring that organisations comply with legal standards, such as the Workplace Safety and Health Act, the Fire Safety Act, and the Building Control Act.

Emergency preparedness is crucial for facilities to avoid the loss of people, property, and commercial opportunities due to unpredictable events such as public health and safety risks like SARS. A well-prepared facility can respond quickly and safely to emergencies, reducing the possibility of injuries or worse.

The measurement and monitoring of operations ensure that facilities comply with laws, meet plans, and fulfil the needs of stakeholders. This helps protect equipment from damage and supports the core business effectively. Facility management practitioners can identify equipment weaknesses, improve operational effectiveness, and reduce waste through regular monitoring, which also maximises resource utilisation. This fosters a culture of continuous improvement, enabling strategic decisions such as adopting new technologies or modifying services. Regular monitoring of facilities enables FM practitioners to foster a culture of continuous improvement and make informed decisions.

Creating a positive occupant experience is crucial for upholding the organisation's corporate image, attracting talent, and retaining employees. Facilities practitioners are responsible for providing services that enhance the workplace experience for both visitors and tenants, thus ensuring a positive occupant experience.

2.3.3 Contribute Value

Value Facilities Management focuses on enhancing facilities by continually improving productivity, fostering innovation, and enhancing quality. Its goal is to ensure that the built environment is efficient, sustainable, comfortable, safe, and useful. This approach allows facilities practitioners to stay ahead of trends and contribute value to their organisations.

In today's fast-paced corporate world, businesses must innovate and adapt quickly to remain competitive and relevant. Facilities management should also begin implementing proactive facility upgrades to accommodate the organisation's evolution. These upgrades should align with the organisation's strategic plans and objectives, providing clear guidance for the project team and making them valuable for FM practitioners.

The goal of implementation outcomes is to decrease costs while enhancing the value for an organisation. This approach enhances financial performance by tracking expenses and identifying areas for cost reduction. Additionally, it boosts the organisation's profitability by cutting waste and enhancing financial performance. Efficient utilisation of resources through cost reduction contributes to overall organisational success.

This method allows facility management practitioners to adjust their assessment of improvement opportunities to align with business changes, ensuring that current structures support organisational objectives. It also measures performance enhancements by assessing gaps, concerns, and problems impacting stakeholders and organisations.

FM often struggles to assess the value and feasibility of facility improvement projects, as they typically only offer temporary solutions to existing issues.

Executive management often allocates resources based on potential value and benefit contributions, even when organisational functions compete for funding. Facility managers must convert project benefits into precise financial terms to create a business case, ensuring efficient
resource allocation.

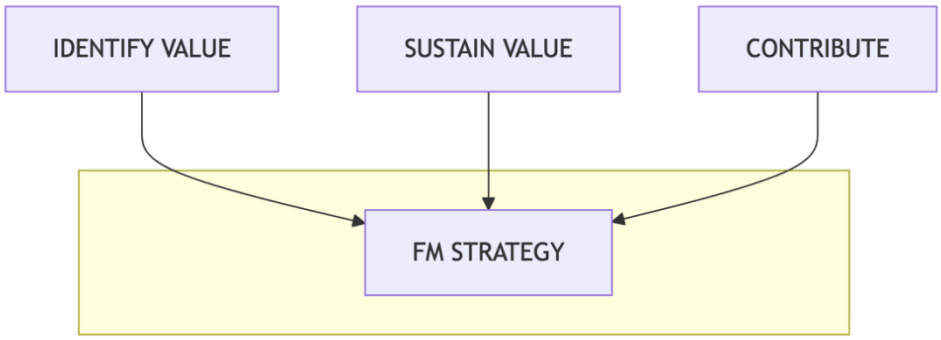

Fig. 2.1 *Theoretical Framework*

3.0 Research Methodology

Research technique is a scientific approach used to gather, evaluate, and interpret data to address research questions or test hypotheses. It helps in formulating objectives, hypotheses, and questions, as well as in selecting the best sample plan, data collection strategy, and analysis approach. However, selecting the right research methodology requires considering variables such as the study's limitations and potential ethical issues.

3.1 Research Design

This study employed a qualitative method to collect original data through interviews with the chief organisation. The data for the qualitative method will be specific and easier to analyse the information related to this study. The study begins with two primary research objectives: the first aims to examine the value level practice on facilities management structures among higher education institutions, while the second focuses on analysing the adaptation of VM into facility management strategies. These objectives guide two research questions, where the first explores the value-level practices within such institutions, and the second investigates the impact of these practices on institutional operations

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3.2 Data Collection

i. Primary Data

Primary data refers to original research data collected through surveys and interviews. Using primary data allows researchers to explore specific information from the research and generate new theories. Various questions will be asked to gather data to help with the study. In this research, primary data is obtained through interviews. The purpose of the interviews is to collect information on the impact of the practice on the operation of higher education institutions.

ii. Secondary Data

Secondary data refers to materials obtained from other sources, such as books, journals, articles, newspapers, and other websites relevant to the research. For this researcher, secondary data is obtained from several resources, including books, articles, and journals related to the topic of this study.

3.3 Data Analysis

Primary data were obtained through interviews and analysed to relate to the research objectives. The data and information are organised according to the categories identified in this research.

Table 1 *Overall Methodology*

Objectives	Method	*Findings*	*Tools*	*Outcomes*
To examine the value level practice on FM structure among Higher Education Institution.	Qualitative: Face to face interview.	• Identify value • Sustain value • Contribute value	Content Analysis	The expected outcome of this research is to determine the extent to which three organisations have integrated VM components in FM.
To analyse the impact of the practice on Higher Education Institution operations.				A detailed analysis of how components FM were applied and how did it affect operational efficiency and institutional sustainability.

4. Results and Discussion

This section discusses the study's results in relation to both objectives.

4.1 Demographic Respondent

The demographic respondents consist of two individuals with distinct roles and professional experiences in facilities management, representing different institutions. The first respondent, Professor Sr. Dr Maimunah Bt. Sapri, is a female Facilities Management Manager at UTM, with 4 years of experience in the field. The second respondent, Ainuddin Bin Abu Kasim, is a male Director of the Office of Facilities Management from UTeM, bringing a wealth of expertise with 22 years of professional experience. Their roles and affiliations reflect diverse institutional perspectives, with one contributing a fresh approach from UTM and the other offering extensive leadership and industry insight from UTeM.

4.2 Achieving Objective One

This section focuses on presenting the findings related to Objective One, which aims to investigate the extent of value-level practices within the financial management (FM) structures of Higher Education Institutions (HEIs). It will explore how HEIs implement value-driven practices in their FM frameworks, including principles such as transparency, accountability, efficiency, and effectiveness in managing financial resources. The analysis will highlight the degree to which these practices are embedded in decision-making processes and financial policies to ensure optimal resource utilisation and long-term sustainability. The results will provide insights into best practices, challenges, and areas for improvement in the financial management structures of HEIs.

The research highlights a significant difference in how UTM and UTEM apply the 19 elements of VM. UTM scored 13 out of 19, indicating a moderate to high level of implementation. While UTM has integrated a substantial portion of VM principles, there is still room for improvement to achieve a more comprehensive and effective application. Factors such as resource limitations, challenges in fully adapting the framework, and differing institutional priorities may contribute to this gap, suggesting areas where UTM can strengthen its approach.

On the other hand, UTEM scored 18 out of 19, reflecting a highly effective and nearly complete adoption of VM principles. This impressive performance demonstrates UTEM's strong commitment to embedding these elements into its operational processes, which likely enhances overall efficiency and ensures alignment with the institution's strategic objectives. The near-perfect score showcases UTEM's proactive approach to VM, positioning the institution as a leader in best practices and continuous improvement.

The five-point gap between UTEM and UTM underscores differences in their maturity and effectiveness in applying VM principles. UTEM's outstanding performance sets a benchmark for institutional excellence, serving as a model for other institutions seeking to enhance their VM practices. These findings suggest that UTM could benefit from studying and emulating UTEM's approach to close the gap, emphasising the importance of VM in driving institutional success and continuous development.

Table 2 *Findings Objective One*

VM	Item	R1	R2
Identify Value	Know Your Organisation's Business	✓	✓
	Know the Facilities Life Cycle	×	×
	Conduct Facilities Condition Surveys	✓	✓
	Know Your Facilities Management Scope	✓	✓
	Prioritise Facilities Services Efforts	×	×
	Know the Difference Between Price and Cost	×	×
	Sustain and Contribute to Organisation's Profit	✓	✓
Sustain Value	Know the Causes of Profit Leakage	×	×
	Contribute to Organisation's Mission and Objectives	×	×
	Implement Preventive Measures	×	✓
	Ensure Legal Compliance	×	✓
	Be prepared for Emergencies	✓	✓
	Measures and Monitor Facilities Operations Performance	×	✓
	Sustain Pleasant Occupant Experience	✓	✓
Contribute Value	Set Facilities Improvement Project Objectives	✓	✓
	Contribute Value through Reducing Expenses	✓	✓
	Assess Facilities Improvement Opportunities	✓	✓
	Select Feasible Facilities Improvement Projects	×	✓
	Communicate Case for Facilities Improvements Projects	✓	✓
	Total	**10/19**	**14/19**

4.3 Achieving Objective Two

The results related to the second objective reveal that both universities adopt distinct methods, procedures, and systems in their financial management (FM) practices. Through the process of generating coding for the first layer, it became evident that each institution has developed unique approaches tailored to its operational needs and institutional structures. These differences may stem from variations in institutional policies, governance frameworks, and resource allocation strategies, which influence how financial processes are managed and controlled. The coding analysis highlighted how these variations impact decision-making processes, accountability measures, and the overall effectiveness of financial management within the universities.

Furthermore, the divergence in financial management practices between the universities underscores the importance of context-specific strategies in higher education institutions. While one university may prioritise centralised control with standardised procedures, the other may emphasise flexibility and decentralised decision-making. These distinctions could affect the level of transparency, efficiency, and adherence to value-based practices in their FM structures. The findings suggest that despite the differences, both institutions aim to achieve financial sustainability and effective resource utilisation, though through varying pathways and systems. Identifying these variations can provide valuable insights for benchmarking and sharing best practices across institutions, thereby enhancing overall financial governance in the higher education sector.

Table 3 Thematic *Analysis on Identifying Value*

VM	Item	Layers
Identify Value	Know Your Organisation Business	i. Organizational Structure ii. Operational Excellence
	Know the Facilities Life Cycle	i. Maintenance strategies ii. Life cycle Management
	Conduct Condition Surveys	i. Maintenance Practices ii. Budgeting and resources
	Know Your Facilities Management Scope	i. Cross-scope Integration ii. Communication and collaboration
	Priorities Facilities Services Efforts	i. Safety and reliability
	Know the Differences Between Price and Cost	i. Awareness and application of Models
	Sustain and Contribute to Organisation's Profit	i. Evidence Based Practice

The implementation of VM principles at UTM and UTEM highlights the differences in how each university approaches facilities management based on its organisational structures. UTM employs a more traditional, decentralized hierarchical structure, where facilities management responsibilities are spread across various departments. This results in challenges such as communication silos and reduced coordination, which can impact overall operational performance. However, pockets of operational excellence do exist within specific departments. In contrast, UTEM adopts an innovative centralized dual-office model, which streamlines operations and enhances alignment with organizational goals. This centralised approach facilitates clear decision-making and higher levels of operational excellence.

When examining facilities life cycle management, UTM demonstrates an inconsistent approach, often relying on reactive maintenance strategies, which can lead to higher costs and inefficiencies. On the other hand, UTEM's centralised structure allows for proactive life cycle management, reducing costs and improving resource utilisation. Similarly, while UTM conducts condition surveys, the decentralised structure often leads to inconsistencies and challenges in budgeting and resource allocation. UTEM, however, systematically conducts surveys through its centralised framework, ensuring efficient resource allocation and optimal facility conditions. The challenge for UTM lies in integrating its facilities management scope across various departments, leading to limited communication and reduced efficiency. UTEM excels in this area, fostering cross-functional collaboration and clear communication within its dual-office model, ensuring that all aspects of facilities management are aligned and efficiently executed.

In terms of prioritising facilities services, safety, and reliability, UTM's decentralised structure leads to inconsistent implementation across departments, which may impact the reliability of services. UTEM's centralised model, however, enables a more consistent and focused approach to safety and reliability, ensuring uniform implementation across the institution. When it comes to understanding the difference between price and cost, UTM's decentralised approach limits its ability to apply comprehensive cost models, often prioritising short-term savings over long-term value. UTEM, with its integrated approach, is better equipped to make strategic, long-term decisions that contribute to sustainability and overall efficiency. In sustaining and contributing to organisational profit, UTM lacks an evidence-based framework necessary for consistent value maximisation. In contrast, UTEM's strong commitment to evidence-based practices within its dual-office model ensures better alignment with broader institutional goals, ultimately contributing more effectively to the organisation's financial and strategic objectives.

Table 4 *Thematic Analysis on Sustain Value*

VM	Item	Layers
Sustain Value	Know the Causes of Profit leakage	i. Energy Management Excellence ii. Energy Efficiency
	Contribute to Organisation's Mission and Objectives	i. Maintenance practices ii. Student-centred infrastructure
	Implement Preventive Measures	i. Maintenance approach ii. Cost management Maintenance
	Ensure legal Compliance	i. Strategic distribution contract
	Be Prepared for Emergencies	i. Risk Mitigation strategies
	Measures and Monitor Facilities Operations Performance	i. Practicality in Maintenance Implementation
	Sustain Pleasant Occupant Experience	i. User Feedback Mechanisms

The thematic elements resulting from sustaining value, such as energy efficiency, alignment with institutional objectives, preventive maintenance, legal compliance, emergency preparedness, performance monitoring, and occupant satisfaction, highlight important distinctions between UTM and UTEM's facilities management approaches. In the context of "Knowing the Causes of Profit Leakage," UTM's decentralised approach often leads to inefficiencies in energy management, with less emphasis on proactive audits and renewable energy adoption. In contrast, UTEM excels in this area, leveraging its centralised dual-office model to implement energy-efficient practices and achieve higher levels of sustainability, reducing unnecessary costs.

Moreover, "Contributing to Organisation's Mission and Objectives," UTM has demonstrated moderate alignment between its facilities management practices and institutional goals, focusing primarily on department-specific needs. However, UTEM integrates maintenance practices and student-centred infrastructure comprehensively across its operations, ensuring facilities support academic success and strategic objectives. When it comes to "Implementing Preventive Measures," UTM employs a reactive approach to maintenance, which can lead to higher long-term costs and disruptions. UTEM, on the other hand, adopts proactive maintenance strategies through its streamlined processes, ensuring consistent operational performance and cost-effective outcomes.

In terms of "Ensuring Legal Compliance," UTM's decentralised structure sometimes results in gaps in compliance and inconsistent application of contractual obligations. UTEM's centralised framework ensures that legal requirements and distribution contracts are uniformly managed, minimising risks and enhancing accountability. Other than that, regarding "Being Prepared for Emergencies," UTM's preparedness efforts are often fragmented across departments, leading to slower responses and a lack of coordinated strategies. UTEM demonstrates strong emergency preparedness through its centralised risk mitigation strategies, including comprehensive response plans and regular drills, which enhance institutional resilience.

In the area of "Measuring and Monitoring Facilities Operations Performance," UTM's decentralised maintenance practices make it challenging to apply practical performance metrics uniformly. Conversely, UTEM uses its dual-office model to effectively monitor maintenance activities, ensuring they align with institutional priorities and operational goals. Lastly, for "Sustaining Pleasant Occupant Experience," UTM's approach to user feedback mechanisms is inconsistent, as it varies between departments. UTEM, however, utilises centralised feedback systems to prioritise user satisfaction, comprehensively addressing occupant needs and fostering a positive environment.

Table 5 *Thematic Analysis on Contribute Value*

VM	Items	Layers
Contribute Value	Set Facilities Improvements Project Objectives	i. Infrastructure and energy efficiency
	Contribute Value through Reducing Expenses	i. Strategic Management of Maintenance ii. Energy management
	Assess Facilities Improvements Opportunities	i. Strategic contract and cost management ii. Maintenance practices
	Select Feasible facilities Improvement Projects	i. Continuous Improvements in Facility Management
	Communicate case for Facilities Improvements Projects	i. Preventive Financial lost

UTM and UTeM exemplify the principles identified in the "Contribute Value" subtheme of the analysis through their commitment to sustainable development, efficient resource management, and innovative facility management practices. Both universities align their efforts with the concept of setting facility improvement project objectives, particularly emphasising infrastructure and energy efficiency. UTM's Green Campus initiative and UTeM's focus on technical solutions for infrastructure upgrades showcase how these institutions integrate sustainability into their operational goals.

In reducing expenses, both universities adopt strategic management of maintenance and energy management practices. UTM employs smart campus management strategies that incorporate technology to optimise energy usage and reduce operational costs, while UTeM prioritises cost-effective engineering solutions to ensure financial sustainability without compromising quality. This reflects their shared focus on strategic value creation through efficient resource utilisation. Assessing facility improvement opportunities is another area where UTM and UTeM excel. UTM leverages partnerships with industry to integrate advanced solutions into its facilities, while UTeM applies its engineering expertise to identify feasible improvement projects. Both institutions emphasise strategic contract and cost management, as well as robust maintenance practices, to ensure that potential improvements align with institutional goals.

When selecting feasible facility improvement projects, UTM's research-driven approach fosters continuous innovation in facility management, ensuring that proposed projects are both sustainable and scalable. UTeM complements this with a focus on practicality, prioritising projects that enhance campus functionality and maintain cost-effectiveness. These efforts reflect their commitment to continuous improvement in facility management. Finally, both universities effectively communicate the value of facility improvement projects to stakeholders. UTM actively showcases its achievements in green technology and infrastructure development to secure support and funding, while UTeM emphasises preventive measures to mitigate financial losses, demonstrating the long-term benefits of proposed initiatives. These practices align with the preventive financial loss layer, underscoring the importance of articulating the case for facility improvements to achieve institutional objectives. Moreover, through these practices, UTM and UTeM demonstrate how theoretical concepts in VM can be applied in real-world contexts, making them ideal case studies for exploring the relationship between strategic facility improvements and institutional sustainability.

5. Conclusion

In conclusion, both universities integrate VM elements into their operations; however, these are applied only partially and not comprehensively. Each university adopts distinct structures and procedures, reflecting its unique institutional frameworks and operational needs, resulting in variations in the implementation and effectiveness of VM practices.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of the paper.

Author Contribution

The authors confirm contribution to the paper as follows: ***study conception and design:*** Saidatul Nadirah, Mohd Hafizal Ishak*;* ***data collection:*** Saidatul Nadirah*;* ***analysis and interpretation of results:*** Saidatul Nadirah, Mohd Hafizal Ishak*;* ***draft manuscript preparation:*** Saidatul Nadirah, Mohd Hafizal Ishak, Azlina Md Yassin, Nurul Afiqah Ahmad**,** Haidaliza Masram*. All authors reviewed the results and approved the final version of the manuscript.*

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