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**FORMULATING ENGINEERING DEPARTMENT SERVICE  
LEADERSHIP FOR SUSTAINABILITY AND  
ENTREPRENEURSHIP IN FIVE-STAR HOTELS:  
A QUALITATIVE STUDY**

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**Abstract:**

The hospitality industry, particularly the five-star hotel sector, operates in a highly demanding environment that requires efficiency, sustainability and continuous innovation. Within this context, the Engineering Department plays a critical role in ensuring operational continuity through the management of technical systems, maintenance and resource optimisation. However, leadership in this department has traditionally been dominated by technical and operational orientations, with limited emphasis on service-oriented leadership. This study aims to conceptualise Engineering Department Service Leadership and examine its role in supporting sustainability and entrepreneurial practices in five-star hotels. A qualitative approach using Basic Qualitative Inquiry was employed. Data were collected through semi-structured interviews with five participants, comprising Engineering Managers and Hotel Managers. The data were analysed using manual coding and thematic analysis. The findings indicate that although technical leadership remains dominant, service leadership elements—such as employee support, effective communication and empowerment—play a crucial role in enhancing sustainability initiatives and operational innovation. This study contributes to the development of a conceptual understanding of service-oriented leadership within hotel engineering departments and provides a foundation for a more holistic leadership model aligned with sustainability and entrepreneurial goals in the luxury hospitality sector.

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**Keyword:**

Engineering Department: Entrepreneurship, Five Star Hotels;  
Service Leadership; Sustainability



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## Introduction

The hospitality industry represents one of the most dynamic and complex service sectors, particularly within the five-star hotel segment, which operates in an environment characterised by high capital investment, advanced technology and intensive labour requirements. Beyond delivering premium service experiences, five-star hotels are increasingly required to ensure operational efficiency, sustainability and organisational resilience amid rising cost pressures, intensified global competition and escalating customer expectations. Within this context, organisational sustainability and entrepreneurship have emerged as two interrelated strategic imperatives that critically influence hotel survival and competitiveness at both national and international levels (Legrand et al., 2013; Adams et al., 2022).

Sustainability in the hotel industry encompasses environmental, economic and social dimensions, necessitating efficient and responsible management of energy, water and facility-related resources. Prior studies indicate that hotels are among the highest consumers of energy and water and contribute significantly to waste generation, positioning the sector as a major source of environmental pressure (Lai, 2016). Concurrently, organisational entrepreneurship, particularly in the form of intrapreneurship, has gained prominence as a mechanism for fostering operational innovation, process optimisation and the creation of sustainable organisational value (Singh et al., 2023).

In advancing sustainability and entrepreneurial agendas, internal organisational leadership plays an increasingly pivotal role. While existing hospitality literature has extensively examined top management and frontline leadership, leadership within technical departments remains relatively underexplored. The Engineering Department, which oversees mechanical and electrical systems, facility maintenance, energy management and infrastructure safety, constitutes the operational backbone of five-star hotels. The effectiveness of this department directly influences service quality, operational costs and overall sustainability performance (Putnam & Price, 2005; Muradin, 2022).

Nevertheless, the literature suggests that leadership practices within hotel engineering departments remain predominantly technical and operational in nature. A strong emphasis on routine maintenance, procedural compliance and cost control often overshadows service-oriented leadership dimensions such as employee empowerment, support and long-term value creation. This technical dominance may constrain the strategic contribution of the Engineering

Department to organisational sustainability and innovation initiatives (Bukhari & Jain, 2022; Barrett, 2020).

Service leadership, as conceptualised in service organisation literature, emphasises service orientation, ethical leadership, employee support and relational value creation. In hospitality settings, service leadership has been recognised as a catalyst for enhancing service quality, customer satisfaction and organisational performance (Cheng & Rashid, 2015). However, empirical studies on service leadership have largely focused on frontline and marketing contexts, leaving technical departments, particularly engineering, largely unexplored.

More critically, there is a lack of empirically grounded conceptual models explaining how service leadership within engineering departments influences sustainability and organisational entrepreneurship in five-star hotels. Although prior studies have examined leadership competencies in hospitality (Chung-Herrera et al., 2003) and engineering competencies for sustainable development, these strands of research remain insufficiently integrated. This gap highlights the need for qualitative, context-specific inquiry to develop a more comprehensive conceptual understanding.

In the Malaysian context, five-star hotels play a significant role in supporting tourism growth and national economic development. Studies have shown that service quality, delivery systems, and operational efficiency are closely linked to customer satisfaction, corporate image and guest loyalty (Razalli, 2020; Cheng & Rashid, 2015). At the same time, sustainability implementation in Malaysian hotels remains influenced by managerial knowledge, incentives and attitudes, reinforcing the importance of strategic, service-oriented departmental leadership.

Accordingly, this study adopts a qualitative approach to explore and develop a conceptual understanding of service leadership within the Engineering Department of five-star hotels. The study pursues two objectives: first, to identify service leadership factors that support sustainability and organisational entrepreneurship; and second, to analyse the role and influence of engineering department service leadership on these strategic outcomes. By examining leadership practices through the lived experiences of engineering managers and leaders, this study seeks to illuminate how technical leadership is interpreted, enacted and translated into organisational value.

In terms of contribution, this study offers several implications. At the policy level, the findings may inform the development of guidelines for sustainable hotel operations, technical leadership training and facility management standards aligned with national tourism strategies. For industry practitioners, the study provides a conceptual foundation for recognising service leadership in engineering departments as a driver of sustainability and innovation. From a societal perspective, service-oriented leadership practices may foster safer, more supportive, and environmentally responsible work environments. Academically, this study contributes new knowledge by establishing an empirically grounded conceptual foundation for service leadership within a five-star hotel engineering context an area that remains underrepresented in hospitality research.

## Literature Review

Research on leadership within the hospitality industry has demonstrated substantial advancement over the past two decades, particularly in elucidating leadership as a critical driver of organisational performance, service quality and long-term competitiveness. Five-star hotels, as capital, technology and resource-intensive service organisations, operate within environments that require high levels of operational efficiency, technical system reliability and alignment with global sustainability imperatives (Adams et al., 2022; Singh et al., 2023). Within this operational landscape, the Engineering Department emerges as a pivotal organisational function not only in supporting daily hotel operations but also in holding strategic potential to advance organisational sustainability and entrepreneurial initiatives.

Despite this significance, existing hospitality leadership research continues to concentrate predominantly on top management and frontline service roles, with comparatively limited attention given to leadership within technical departments such as engineering. Leadership in the Engineering Department is frequently conceptualised as a predominantly technical and operational function, centred on maintenance activities, safety compliance and cost control (Muradin, 2022; Lai, 2016). While these functions are essential, such a narrowly defined leadership orientation is increasingly viewed as inadequate in addressing the complex and interrelated demands of sustainability and innovation in five-star hotel operations.

Within service organisation literature, service leadership is characterised by a strong emphasis on service orientation, employee empowerment, ethical conduct and sustained organisational support aimed at long-term value creation. Empirical studies in hospitality contexts have consistently demonstrated that service leadership contributes positively to service quality and customer satisfaction. However, its application within technical departments remains empirically underexplored. Research on engineering management competencies further reinforces this gap, indicating that leadership and interpersonal capabilities are frequently identified as more critical than purely technical expertise (El-Baz & El-Sayegh, 2010; Wu et al., 2012). These findings suggest the need to reconceptualise Engineering Department leadership beyond technical execution towards a more service-oriented and strategic role.

The engineering management literature further reveals fragmentation in the conceptualisation of leadership competencies and models. Barrett (2020) argues that the absence of a comprehensive and integrative competency framework for engineering managers has constrained the development of holistic, adaptive and future-oriented leadership practices. Supporting this view, earlier studies indicate that prevailing competency models prioritise technical proficiency, project management and operational control, often at the expense of service orientation and sustainable value creation (Palmer, 1999; Shah & Nowocin, 2015).

In the specific context of five-star hotels, the Engineering Department is entrusted with critical responsibilities, including energy management, heating, ventilation and air conditioning (HVAC) systems, fire safety, and facility maintenance. These functions have direct and measurable implications for hotel sustainability performance. Empirical evidence suggests that energy consumption and maintenance constitute some of the highest operational cost components in luxury hotels, underscoring the need for strategic leadership within this department (Lai, 2016). Although operational approaches such as Total Productive Maintenance (TPM) have been shown to enhance equipment efficiency and energy

performance, their effectiveness is largely contingent upon strong departmental leadership support (Manjunatha et al., 2018).

From a sustainability perspective, global hospitality research indicates a growing adoption of green technologies and advanced energy management systems, driven by regulatory pressures, customer awareness and market competition (Songur et al., 2022; Ben Youssef & Zeqiri, 2020). Nonetheless, Adams et al. (2022) observe that sustainability research in hospitality remains predominantly environmentally focused, with comparatively limited attention given to economic and social dimensions, particularly the role of departmental leadership. This imbalance highlights the need for studies that explicitly link technical department leadership to comprehensive sustainability outcomes.

Beyond sustainability, organisational entrepreneurship, particularly in the form of intrapreneurship, has gained recognition as a vital mechanism for innovation within hotel operations. Innovation in the hospitality industry is not confined to marketing and guest services but increasingly extends to technical systems, energy optimisation and building safety (Zrnić & Božić, 2024; A Review Paper on Technological Innovation of Hotel Industry in Post-Pandemic, 2023). However, existing intrapreneurship studies rarely examine how leadership within engineering departments fosters innovation cultures and sustainable value creation.

Research in engineering and project management suggests that leadership practices characterised by empowerment, experiential learning, and technological adaptability are essential preconditions for sustained innovation (Angolia, 2016; Nittala & Jesiek, 2018). Applied to the hotel context, these insights imply that service leadership within engineering departments may play a significant role in enabling organisational entrepreneurship by supporting idea generation, process improvement and the adoption of smart and sustainable technologies.

A synthesis of the literature reveals several critical research gaps. First, there is a paucity of studies that specifically investigate service leadership within the Engineering Department of five-star hotels. Second, there is a notable absence of empirically grounded conceptual models that link engineering department service leadership with sustainability and entrepreneurial outcomes. Third, while quantitative studies dominate existing research, qualitative investigations that explore the lived experiences, interpretations and leadership practices of engineering managers remain limited, particularly within Southeast Asian and Malaysian contexts.

In response to these gaps, the conceptual framework of this study integrates Service Leadership Theory, the Resource-Based View and sustainable leadership theory. This integrated framework positions Engineering Department Service Leadership as a central construct encompassing service orientation, empowerment, organisational support and technical–strategic integration, with sustainability and organisational entrepreneurship as key outcomes. Such an approach aligns with calls in the literature for more contextualised, integrative and future-oriented leadership models in hospitality and engineering management (Barrett, 2020; Singh et al., 2023).

## Methodology

This study adopts a qualitative research approach employing a Basic Qualitative Inquiry design to explore and gain an in-depth understanding of service leadership practices within the Engineering Department of a five-star hotel, as well as their relationship with organisational sustainability and entrepreneurship. A qualitative approach was deemed appropriate, as the study seeks to examine the meanings, experiences and interpretations of managers regarding departmental leadership practices, rather than to test hypotheses or statistically measure relationships between variables. Within the complex and service-intensive context of the hospitality industry, a nuanced understanding of managerial experiences is essential for the development of a conceptual framework grounded in operational realities (Putri & Diwyarthi, 2024).

The Basic Qualitative Inquiry design was selected because it allows the investigation of “how” and “why” leadership practices are enacted and how these practices influence sustainability and entrepreneurial outcomes within hotel organisations. This design is particularly suitable for foundational research aimed at developing an initial conceptual model based on participants’ perspectives. In the context of hotel engineering departments, leadership has traditionally been framed as highly technical and operations-oriented, with emphasis placed on systems management, maintenance and technical competence (Borsenik, 1979). A basic qualitative approach therefore enables a more holistic exploration of service-oriented leadership dimensions that extend beyond technical functions.

Data collection was primarily conducted through semi-structured interviews, supplemented by limited non-participant observations. Semi-structured interviews were chosen to provide flexibility in exploring participants lived experiences while ensuring alignment with the study objectives. The interview protocol was developed based on the research problem and specific objectives, focusing on engineering leadership practices, sustainability support mechanisms, and internal entrepreneurial initiatives. This approach is consistent with prior qualitative research in hotel management, which underscores the importance of managerial perspectives in understanding operational leadership practices (Akel & Noyan, 2024; Shrestha & Shrestha, 2024).

Limited observational data were collected to contextualise the operational environment of the Engineering Department, including work interactions, technical settings and organisational culture. These observations supported more accurate interpretation of interview findings and strengthened data triangulation. In studies of facility management and hotel engineering, observational methods have been shown to provide valuable insights into how managerial decisions are translated into day-to-day operational practices (Priyangika et al., 2020).

Purposive sampling was employed to select participants who could provide rich and relevant data. The study targeted engineering managers and hotel managers working in five-star hotels who were directly involved in managing engineering operations. This sampling strategy was appropriate, as individuals with specific expertise and leadership experience were best positioned to offer in-depth insights into the study phenomenon. In qualitative hospitality research, the relevance and depth of participants’ experience are considered more critical than sample size (Wessels et al., 2023).

A total of five participants were deemed sufficient, as the study prioritised depth of understanding rather than statistical generalisation. This sample size facilitated detailed exploration of participants' experiences and supported the achievement of data saturation, whereby recurring themes emerged, and no substantial new information was identified. Such an approach aligns with established qualitative research practices in hotel management and departmental leadership studies (Putri & Diwyarthi, 2024).

Data analysis was conducted using manual coding and thematic analysis. All interviews were transcribed verbatim prior to analysis. The coding process began with open coding to identify meaningful units of data, followed by the organisation of codes into categories and overarching themes. Thematic analysis was selected due to its flexibility and suitability for identifying patterns of meaning across qualitative data, particularly in leadership and organisational management research. Manual analysis facilitated sustained researcher engagement with the data, thereby enhancing contextual sensitivity and interpretive depth.

Ethical considerations were rigorously addressed throughout the study. Participants were fully informed of the research purpose, data collection procedures and their right to withdraw at any stage without consequence. Informed consent was obtained prior to data collection. Participant confidentiality was maintained through the use of pseudonyms, and all data were securely stored in accordance with ethical research standards.

To ensure trustworthiness, multiple strategies were employed. Credibility was enhanced through the selection of experienced participants and the use of methodological triangulation. Dependability was supported through systematic documentation of research procedures, while confirmability was strengthened through reflective practices and the maintenance of an audit trail. Additionally, the use of thick descriptions contributes to the transferability of the findings to comparable five-star hotel contexts.

Overall, the methodological design of this study aligns closely with its objectives of identifying service leadership factors and examining their role and influence on sustainability and entrepreneurship within the Engineering Department of a five-star hotel. The integration of a Basic Qualitative Inquiry approach, purposive sampling, in depth interviews and rigorous thematic analysis provides a robust methodological foundation for generating meaningful insights and advancing knowledge in hospitality and engineering management.

## **Findings**

This section presents the findings derived from semi-structured interviews conducted with five participants comprising Engineering Managers and Hotel Managers from a five-star hotel. Data were analysed manually using coding and thematic analysis to identify recurring patterns of meaning, convergent perspectives and variations in participants' experiences concerning service leadership practices within the Engineering Department and their influence on organisational sustainability and entrepreneurship. The findings are organised according to the key themes that emerged from the interview data and are further contextualised through observations of the hotel's operational environment.

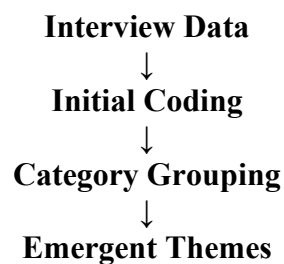
Overall, the findings indicate that leadership practices within the Engineering Department remain predominantly technical and operational in orientation. Nevertheless, there is a discernible and growing awareness among managers of the importance of adopting a more

service-oriented leadership approach. Participants acknowledged that service leadership practices, such as employee support, effective communication and empowerment, have the potential to enhance the effectiveness of sustainability initiatives and stimulate operational innovation. However, the implementation of these practices remains inconsistent and is largely shaped by individual leadership styles rather than being embedded within a structured and coherent departmental leadership framework.

### ***Coding Process and Theme Formation***

The data analysis process commenced with open coding of the interview transcripts; whereby meaningful units of data were systematically identified and labelled. These initial codes were subsequently examined for similarities and patterns before being organised into broader analytical categories. Through an iterative and reflective process, the categories were further refined and synthesised into overarching themes that captured the core dimensions of participants' experiences and perspectives.

Figure X provides an overview of the theme development process employed in this study, illustrating the progression from raw interview data to emergent themes.



**Table 1: Summary of Coding and Themes of Study Findings**

<b>Interview Questions</b>	<b>Main Codes (Coding)</b>	<b>Main Themes</b>
Question 1	Technical focus, routine maintenance, compliance with SOPs	Engineering Leadership that is too operational
Question 2	Employee support, communication, role models, empowerment	Elements of Service Leadership in the Engineering Department
Question 3	Energy conservation, small innovations, internal ideas	Influence of Leadership on Sustainability and Entrepreneurship
Question 4	Need for guidance, role ambiguity, leadership model	Need for a Conceptual Model of Service Leadership

### ***Theme 1: Engineering Leadership That Is Too Operational***

The findings indicate that the leadership practices within the Engineering Department remain predominantly oriented towards technical and operational responsibilities, including routine maintenance, emergency repairs and strict adherence to standard operating procedures. While such an approach is essential to ensure the continuity and reliability of hotel operations, it simultaneously constrains the broader strategic role of leadership within the department.

This perspective was consistently reflected in participants' narratives. As one Engineering Manager explained:

“Our daily operations are indeed very technical. The main focus is to ensure that the system runs, the rooms have no complaints, and the chiller is not down. The leadership aspect from a service perspective is really under-emphasised.” (EM1).

This finding directly supports Problem Statement 1, which highlights the dominance of technically driven leadership and the relative absence of service-oriented leadership practices within the Engineering Department. Such a leadership orientation limits the department's capacity to function as a strategic contributor to organisational sustainability and entrepreneurship, as leadership efforts remain largely confined to operational continuity rather than long-term value creation and innovation.

### ***Theme 2: Elements of Service Leadership in the Engineering Department***

Although technically oriented leadership continues to dominate the Engineering Department, participants identified several service leadership elements as critical in supporting departmental performance. These elements include open and effective communication, consistent support for staff, fairness in task allocation and leaders acting as positive role models. Collectively, such practices were perceived as enabling mechanisms that not only enhance operational effectiveness but also strengthen employee engagement within the department.

This perspective was clearly articulated by a Hotel Manager, who highlighted the human-centred dimension of engineering leadership:

“A good engineer is not only technically skilled but also knows how to take care of people. When staff feel valued, they are more open to following green initiatives or making improvements.” (HM2)

This theme underscores that participants conceptualise service leadership as an approach that humanises technically oriented roles while fostering a supportive and conducive work environment. Such a leadership orientation aligns with Specific Objective 1 of the study, which seeks to identify service leadership factors within the Engineering Department that support organisational sustainability and entrepreneurship.

### ***Theme 3: Leadership Influence on Sustainability and Entrepreneurship***

Participants consistently associated the effectiveness of sustainability initiatives and operational innovation with the prevailing leadership style within the Engineering Department. Leadership approaches that encourage idea generation, provide support for experimentation and allow staff the autonomy to explore alternative solutions were perceived as key drivers of incremental yet meaningful innovations. These innovations include improvements in energy efficiency, optimisation of maintenance schedules and the adoption of smart technologies within daily operations.

This perspective was reflected in the experience shared by one Engineering Manager:

“Many energy-saving ideas come from technicians themselves. But if the boss doesn't support them, the idea just dies.” (EM3)

These findings suggest that service leadership functions as a catalyst for organisational intrapreneurship, even when manifested at a modest or incremental level. By fostering an environment that values employee initiative and innovation, service-oriented leadership within the Engineering Department supports the advancement of sustainability and entrepreneurial practices. This theme directly aligns with Specific Objective 2 of the study, which seeks to analyse the role and influence of service leadership on organisational sustainability and entrepreneurship.

#### ***Theme 4: The Need for a Conceptual Model of Service Leadership***

All participants consistently reported the absence of a formal leadership guide or structured model specifically tailored to the Engineering Department of five-star hotels. Leadership practices were described as being largely shaped by individual managerial experience, organisational culture and in some cases, directives from hotel headquarters. This lack of a unified reference framework was perceived as a significant challenge in aligning engineering leadership practices with broader sustainability and innovation agendas.

This perspective was articulated by a Hotel Manager, who noted:

“There is no specific model for engineering leadership. Usually, it is based on one’s own experience or HQ’s instructions. If there is a framework, it is easy to align with sustainability.” (HM1)

This theme provides direct empirical support for Problem Statement 2, which highlights the absence of an empirically grounded conceptual model for Engineering Department leadership in five-star hotels.

Furthermore, all identified themes were consistently supported by participants’ narratives, demonstrating a convergence of views across the five respondents. The recurrence of key ideas particularly the dominance of technically oriented leadership, the importance of leadership support for sustainability and innovation and the absence of a formal leadership framework indicates that data saturation had been achieved. The consistency of these findings reinforces the robustness of the thematic analysis and strengthens the credibility of the study’s conclusions.

#### **Discussion of Key Findings**

The findings of this study demonstrate that, while the Engineering Department plays a critical role in the operational effectiveness of five-star hotels, its leadership potential as a strategic driver of sustainability and organisational entrepreneurship has yet to be fully realised. Service leadership emerges as a key integrative element capable of linking technical competence with strategic value creation. In this regard, the study contributes to existing literature by reinforcing the view that leadership within technical departments should not be confined to a support-oriented function but rather positioned as an agent of organisational change.

An important and unanticipated finding relates to participants’ concerns regarding the potential risks associated with an excessive emphasis on innovation and entrepreneurial initiatives. Several participants cautioned that unchecked experimentation could compromise system reliability and operational stability. As articulated by one Engineering Manager:

“If there is too much experimentation, there is a risk of the system failing. So we have to strike a balance.” (EM4)

This insight reveals an inherent tension between the imperative for operational stability and the pursuit of innovation within technically intensive hotel environments. Addressing this tension is therefore essential in the development of a leadership model that balances risk management with sustainable innovation.

Overall, the findings indicate that leadership within the Engineering Department of five-star hotels remains predominantly technical and operational in orientation yet holds considerable potential to evolve towards a service leadership approach that supports sustainability and organisational entrepreneurship. The absence of a clearly articulated and empirically grounded conceptual model further justifies the need for this study to propose an Engineering Department Service Leadership framework informed by practitioners lived experiences. Collectively, these findings provide a robust foundation for subsequent discussion, practical and theoretical implications and the development of a more holistic and contextually grounded leadership model within the hospitality industry.

## Conclusions

This study aims to formulate the concept of Engineering Department Service Leadership and to examine its role and influence on sustainability and organisational entrepreneurship within the context of a five-star hotel, using a qualitative research approach. Based on in-depth interviews with five participants comprising Engineering Managers and Hotel Managers, the findings indicate that leadership within the Engineering Department remains predominantly driven by technical and operational considerations. Leadership practices are largely focused on system reliability, facility maintenance and compliance with standard operating procedures, consistent with prior findings in the engineering and hospitality management literature (Lai, 2016; Muradin, 2022; Putnam & Price, 2005). While such an orientation is essential to ensure operational continuity in five-star hotels, it simultaneously constrains the department’s potential to function as a strategic driver of organisational sustainability and entrepreneurship.

Nevertheless, the study reveals a consistent recognition among participants of the importance of service leadership elements in strengthening Engineering Department performance. Leadership practices characterised by employee support, open communication, empowerment, fairness and leading by example were identified as key enablers of sustainability initiatives and entrepreneurial activities within hotel operations. This finding aligns with previous studies demonstrating that service-oriented leadership enhances employee engagement and facilitates organisational change, particularly in service-based industries such as hospitality (Cheng & Rashid, 2015; Adams et al., 2022). Within the Engineering Department context, service leadership emerges as a critical mechanism that bridges technical competence with long-term strategic value creation.

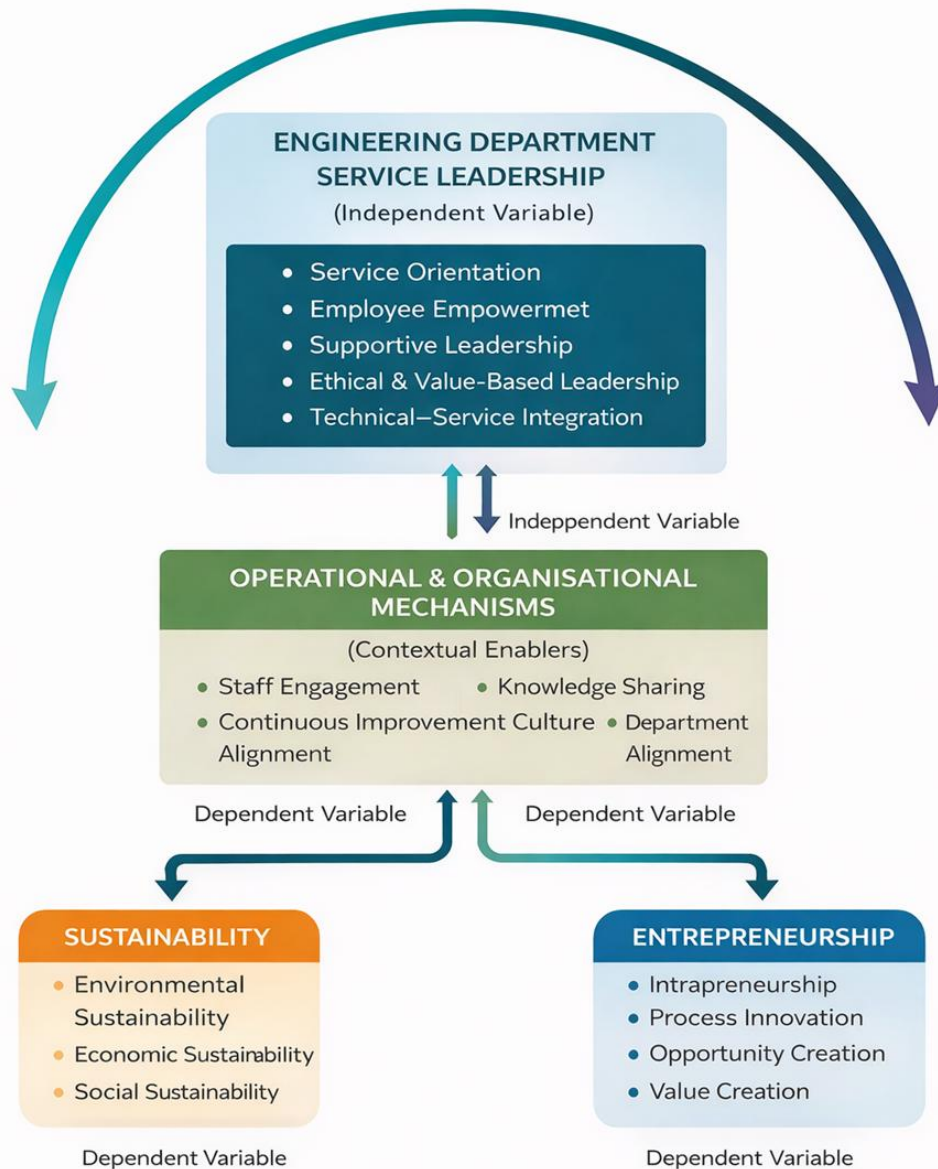
Further analysis of the findings suggests that service leadership influences sustainability and entrepreneurship primarily through indirect pathways, including support for new ideas, incremental operational innovations and optimisation of resource utilisation. Although such contributions are often modest in scale, they reinforce the argument that departmental leadership plays a meaningful role in fostering intrapreneurship and sustainable practices, as highlighted in the hospitality sustainability and innovation literature (Songur et al., 2022; Singh

et al., 2023). At the same time, the study identifies an inherent tension between the need to maintain technical and operational stability and the pursuit of innovation, underscoring the importance of leadership balance in technically intensive environments.

A key contribution of this study lies in its identification of the absence of a specific leadership model or conceptual framework to guide Engineering Department leadership in supporting sustainability and entrepreneurship. This finding supports existing critiques that leadership models in hospitality and engineering management remain largely generic and insufficiently sensitive to the unique context of technical departments (Barrett, 2020). Accordingly, this study advances knowledge by providing an empirical foundation for the development of a more contextualised, service-oriented Engineering Department Service Leadership model that is responsive to the operational realities of five-star hotels.

Overall, the study confirms that the Engineering Department should not be viewed merely as a technical support function, but as a potential strategic driver of sustainability and organisational entrepreneurship through service-oriented leadership practices. This conclusion calls for a re-examination of leadership perspectives within technical departments in the hospitality industry and provides a basis for future research, including quantitative and mixed-methods studies, to further test and refine the proposed leadership framework.

## ENGINEERING DEPARTMENT SERVICE LEADERSHIP FRAMEWORK FOR SUSTAINABILITY AND ENTREPRENEURSHIP IN FIVE-STAR HOTELS



**Figure 1. The conceptual model Engineering Department Service Leadership Framework for Sustainability and Entrepreneurship in Five-Star Hotels**

### Conceptual Model Description:

The Engineering Department Service Leadership Framework for Sustainability and Entrepreneurship in Five-Star Hotels conceptualises the relationship between service-oriented leadership practices within the Engineering Department and two strategic organisational outcomes: sustainability and entrepreneurship. In this framework, Engineering Department Service Leadership serves as the primary independent construct, encompassing key dimensions

including service orientation, employee empowerment, supportive and ethical leadership, and the integration of technical expertise with service-driven values. Collectively, these dimensions signify a fundamental shift from a predominantly technical and operations-focused leadership orientation towards a more holistic, value-creating leadership approach.

The framework further emphasises the role of Operational and Organisational Mechanisms as critical mediating processes through which leadership practices are translated into tangible organisational outcomes. These mechanisms include staff involvement, knowledge sharing, the cultivation of a continuous improvement culture and the strategic alignment of departmental activities with broader organisational objectives. Through these interrelated mechanisms, service-oriented leadership systematically shapes employee behaviours and operational practices, thereby enhancing the effectiveness of leadership influence across the organisation.

The ultimate outcomes of the framework are the advancement of Sustainability, encompassing environmental, economic and social dimensions and Entrepreneurship, manifested through intrapreneurial behaviour, process innovation, opportunity recognition and organisational value creation. Overall, the framework illustrates how the Engineering Department can transcend its traditional technical support role and emerge as a strategic driver of sustainability and entrepreneurship through the adoption of service-oriented leadership practices within the context of five-star hotel operations.

## **Contribution/Practical Implications**

### ***Limitations***

This study is limited by its focus on five participants from a single five-star hotel and therefore the findings are not intended to be statistically generalisable. In addition, the adoption of a Basic Qualitative Inquiry approach places emphasis on the interpretation of participants' experiences, which may be shaped by specific organisational contexts and individual leadership styles (Creswell & Poth, 2018). While these limitations constrain generalisation, they are consistent with the study's aim of developing an in-depth and contextually grounded conceptual understanding.

### ***Research Implications***

From a research perspective, this study contributes to the hospitality and engineering management literature by extending empirical understanding of service leadership within the Engineering Department, an organisational context that remains underexplored in existing studies (Barrett, 2020; Muradin, 2022). The findings provide a conceptual foundation for the development of an Engineering Department Service Leadership model that explicitly links departmental leadership with organisational sustainability and entrepreneurship. Furthermore, this study highlights opportunities for future research employing quantitative or mixed methods designs to test and refine the relationships among the empirically identified constructs and outcomes (Singh et al., 2023).

### ***Practical Implications***

From a practical standpoint, the findings suggest that five-star hotel management should place greater emphasis on cultivating service-oriented leadership within the Engineering

Department. Strengthening leadership practices that prioritise employee support, empowerment and strategic alignment has the potential to enhance the systematic and effective implementation of sustainability initiatives and operational innovation (Putnam & Price, 2005).

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**Author Contribution Statement:** All authors contributed significantly to the development of this manuscript. [Author A] was responsible for the conceptualization, methodology, and overall supervision of the study. [Author B] handled data collection, analysis, and interpretation of results. [Author C] contributed to the literature review, drafting, and critical revision of the manuscript. All authors read and approved the final version of the manuscript prior to submission.

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