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# EXPLORING THE FACILITIES MANAGEMENT EDUCATION NEEDS IN SRI LANKA

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## *ABSTRACT*

*Facilities Management (FM) is a multidisciplinary profession at the core of building operations management. As such, it requires a wide range of skills that differ significantly from region to region due to variable industry sizes, maturity levels, characteristics of building stocks and services, and occupant cultures. Consequently, it is essential to cultivate the necessary knowledge and skills to produce competent FM professionals to cater to the demand of the FM industry. Worldwide, various professional bodies have specified essential competencies for the FM profession. This study aims to reveal the current state of such competencies in the FM industry in Sri Lanka. Accordingly, a scrupulous literature review was conducted to identify the FM competencies. Twelve competency attributes germane to the Sri Lankan context were identified, and subsequently, a web-based questionnaire survey was conducted to analyse their importance and competence levels. The mean ratings were calculated using the received responses and were used to develop an Importance-Competence Analysis (ICA) matrix. The results indicated that 'operations and maintenance', 'leadership' and 'technology' are the prioritised competencies that need improvements through appropriate education and training.*

***Keywords:*** *Competencies; Education; Facilities Management; Profession; Sri Lanka.*

## 1. INTRODUCTION

Since its inception, Facilities Management (FM) as a dynamic profession continues to mature and evolve. From the late 1980s, FM has gradually gained a position as a discipline and a profession within the property and construction industry. Professional bodies offer vital platforms for the exchange of experience and information among their

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members (Green, 2015). International Facility Management Association (IFMA) in the United States (US), the Japan Facility Management Association (JFMA) in Japan, the British Institute of Facilities Management (BIFM) in the United Kingdom (UK) - currently known as the Institute of Workplace and Facilities Management (IWFM), and the Facility Management Association (FMA) in Australia are different FM professional institutes around the world who contributed towards the evolving journey of FM. In 1992, IFMA created an educational program for FM professionals, and there are now over 80 FM-related degree programs offered by 65 different universities around the world (Anna-Lissa, 2005, as cited in Mohamat-Nor, 2014). Given the rapid development in building management technology, cultivating an accurate understanding of FM is important to ensure that the demands of this dynamic industry are met.

While studies on FM education have emerged (Lai et al., 2019), research on FM education in Sri Lanka is limited. After an extensive search using the keywords "research", "Facility Management education", and "Sri Lanka" on renowned literature databases including Scopus and Emerald, no results were obtained. However, the establishment of the FM degree program and professional body are important milestones of the FM industry evolution in Sri Lanka. The Honours Degree of Bachelor of Science in FM degree programme, started in 2006 by the University of Moratuwa, covers a wide arena of subjects to equip the graduates with knowledge and skills in FM, including 'services technology', 'property management', 'project studies', 'construction technology', 'management' and 'IT studies' (University of Moratuwa, 2023). This 4-year degree program has been accredited by the Royal Institution of Chartered Surveyors (RICS) since 2006 and by IFMA since 2020. The Institute of Facilities Management Sri Lanka (IFMSL), which is the sole professional body for FM in Sri Lanka, was founded in March 2013. After completing the 4-year degree programme, graduates can apply for the Associate Membership of IFMSL and invest in their knowledge growth through different Continuing Professional Development (CPD) programs and pieces of training organised by IFMSL (IFMSL, 2023). However, considering the multi-disciplinary nature of the profession, fresh graduates need time to adapt to the needs of the dynamic industry.

The capability of an FM graduate to match the industry needs can be demonstrated in terms of FM competencies established by leading FM professional bodies around the world. However, refinement of those competencies is needed to customise them to the local context. Assessing the current competence levels of professionals against the importance levels of the competencies for the local industry would facilitate the identification of the needs for improvement in the current education program curriculum (Lai, 2010). By identifying areas for improvement, educational institutions and industry stakeholders can work together to enhance the skills and knowledge of FM professionals and support the sustainable development of infrastructure and facilities in Sri Lanka. Hence, the research question of the present study is: "What are the FM competencies that require special attention in FM education and training in Sri Lanka?". Accordingly, the following three (03) research objectives were formulated to answer the research question:

- Objective 1: Identify the competencies required of an FM professional.
- Objective 2: Solicit the importance level of the FM competencies in the Sri Lankan context and their current competence levels; and
- Objective 3: Recommend the need for education and training to enhance the identified FM competencies.

Section 2 of this paper reports the literature review conducted to identify the FM competencies. Section 3 explains the research methods adopted in this study and Section 4 presents the findings of the study along with the discussion of the findings. The concluding remarks are presented in Section 5.

## 2. FACILITIES MANAGEMENT COMPETENCIES

A comprehensive literature review was conducted on FM competencies. Competencies are the capacity or ability required in an individual to perform a job effectively. According to Mace (2005), competencies are acquired personal skills that reflect the potential ability to provide a consistently adequate or high level of performance in a specific job function. Competency is used to ensure that all demands in the workplace are met, and it includes job-relevant behaviour, motivation, and technical knowledge (Kamaruzzaman et al., 2018). FM competencies have evolved over time. Several professional organisations and individual researchers have identified different attributes of competencies in which a facility manager should excel. RICS has defined six (06) hard FM competencies, which are essential technical skills for FM operations, and eight (08) soft FM competencies, which are required for collaborative organisational operations. IWFM has defined 10 competencies. Furthermore, FM professional bodies in various regions have customised those competencies to cater to local requirements (table 1). Those competencies defined by professional bodies have been reviewed and amended by various researchers for different and specific needs. Among those proposed competencies, property management, operations management, maintenance management, sustainability, technology, and leadership are commonly required in all the above contexts.

*Table 1: Summary of FM competencies specified by professional bodies*

| FM competency | IFMA | IWFM | RICS | IFMSL |
|---|---|---|---|---|
| **Property Portfolio Management** | | | | |
| Develop/implement the real estate master plan | | √ | | √ |
| Property and asset management | √ | √ | √ | |
| Space design, planning and management | | √ | | √ |
| Management of fitting out projects | | | | √ |
| **Project Execution and Management** | | | | |
| Project (including minor renovations, repair/refurbishment, etc.) planning | √ | √ | √ | √ |
| **Technology** | | | | |
| Building Information Modelling (BIM) management | | | √ | √ |
| **Procurement and Contract Management** | | | | |
| Service innovation | | | √ | |
| Procurement and tendering | √ | √ | √ | √ |
| Contract administration | √ | √ | √ | √ |
| Supplier management | | | √ | √ |
| Outsourcing | | | √ | √ |
| Inventory management | √ | √ | √ | |
| **Organisational Resource Management** | | | | |
| Information management | √ | √ | √ | |
| Knowledge management | √ | | | |
| **Operation and Maintenance Management** | | | | |
| Improve facility performance | √ | | | |

| | | | | |
|---|---|---|---|---|
| Manage/oversee facility operations and maintenance activities | | | | √ |
| Manage/oversee occupant services (parking, landscaping, janitorial services, food services, concierge, facility helpdesk, security, and safety) | √ | √ | √ | √ |
| Manage building service systems (e.g., drainage, piping, sanitary, safety, electrical systems, etc.) | √ | √ | √ | √ |
| Maintenance of building elements | | √ | √ | √ |
| **Compliance Management** | | | | |
| Energy management | √ | √ | | |
| Building hygiene management | | √ | | √ |
| Health and safety management | √ | | | √ |
| Risk management techniques and practices | | √ | | |
| Occupational safety and health management in construction | √ | | | √ |
| Sustainability | √ | √ | | √ |
| Waste management | √ | | | |
| **Leadership** | | | | |
| Manage/oversee the development/use of the facility communications plan | √ | | | |
| Prepare and deliver messages that achieve the intended result | | √ | | |
| Plan strategically | √ | √ | | |
| Sector knowledge | | √ | | |
| Organisational performance | | | | √ |
| Corporate social responsibility | √ | | | |
| Workplace/facilities management policy | √ | | | |
| Project management | √ | | | √ |
| People management | √ | | √ | √ |
| Culture and values | √ | √ | | |
| Healthy and productive workplace | √ | √ | | √ |
| Problem-solving and decision making | | | | √ |
| Analysis of client requirements | | | | √ |
| Negotiation | | | | √ |
| Conduct rules, ethics, and professional practice | | | √ | |
| Team working | | | √ | |
| Cooperation with suppliers and specialists for matters/work processes related to facility management | √ | | √ | |
| Understand organisational aim and strategy | √ | | √ | |
| Understand organisation structure and organisation administration | √ | | | |
| Develop/implement practices that support the performance and goals of the entire organisation | √ | √ | √ | |
| Develop/implement practices that support the performance of the facility organisation | √ | | | |
| **Emergency Preparedness** | | | | |
| Plan/manage/oversee/support the organisation's emergency preparedness plan | √ | | | |
| Plan/manage/oversee/support the organisation's business continuity plan | √ | | | |
| Risk management | √ | | | |
| Logistics management | | | | |
| **Legal** | | | | |
| Resilience | √ | | | |
| Local legal system | | | √ | |
| Dispute resolution | | | | √ |
| Data management | | | | √ |
| **Financial Management** | | | | |
| Manage/oversee the finances associated with contracts | √ | √ | √ | |
| Administer procurement and chargeback procedures | √ | | | |
| Budgeting | √ | | | |
| Insurance on property and liability | √ | | | |
| Auditing | √ | | | |

| | |
|---|---|
| Financial reporting | √ |

Based on the findings presented in Table 1, it is evident that the recognition of BIM management as a competency is lacking in IFMA and IWFM, which is a noteworthy factor. Additionally, within the field of FM, despite the significance of legal considerations, competencies such as dispute resolution and data management are not acknowledged by IFMA, IWFM, and RICS. Knowledge of the local legal system is also not regarded as a competency by IFMA, IWFM, and IFMSL. Furthermore, it can be observed that a significant number of competencies related to financial management and emergency preparedness are not recognised by RICS and IWFM as well. Surprisingly, IFMSL does not recognise any competencies in financial management, emergency preparedness, and organisational resource management as requirements for the FM profession. A main reason for these deficiencies could be the lack of FM education and training-related research.

## 3. RESEARCH METHOD

The list of FM competencies identified in Table 1 is identified using a comprehensive literature search, screening, and selecting studies, and extracting and analysing the findings. The findings listed in Table 1 were consolidated and summarised into 12 Competency Attributes (CA)s, based on a manual content analysis. The list of CAs was validated by the council members of the IFMSL, thereby attaining objective 1. This study defines competency attributes as overarching qualities or characteristics that encompass and relate to multiple individual competencies. These attributes are conceptualised as higher-level themes that provide a comprehensive perspective on the underlying factors contributing to the effective performance of FM.

The validated 12 CAs are:

- Competency Attribute 1 (CA1): Property portfolio management (e.g., asset management, space planning)
- Competency Attribute 2 (CA2): Project execution and management (e.g., manage/oversee renovation projects)
- Competency Attribute 3 (CA3): Technology (e.g., use of IT on building operations and maintenance)
- Competency Attribute 4 (CA4): Procurement and contracts management (e.g., supplier/inventory management, outsourcing)
- Competency Attribute 5 (CA5): Organisational resources management (e.g., information/knowledge management, labour management)
- Competency Attribute 6 (CA6): Operations and maintenance (e.g., oversee and improve facility operations/maintenance)
- Competency Attribute 7 (CA7): Compliance management (e.g., conform to quality standards, good practices)
- Competency Attribute 8 (CA8): Leadership (e.g., strategic planning, decision-making)
- Competency Attribute 9 (CA9): Emergency preparedness (e.g., business continuity planning, crisis/recovery management)
- Competency Attribute 10 (CA10): Legal (e.g., laws and regulations, dispute resolution)

- Competency Attribute 11 (CA11): Financial management (e.g., budgeting, financial reporting, insurance)
- Competency Attribute 12 (CA12): Documentation management (e.g., record keeping, word processing)

Based on the literature findings, this study adopted a survey approach. A questionnaire survey was conducted and the questionnaire design for the survey facilitates the revelation of the perceived importance of the 12 CAs and the perceived competence levels of FM practitioners in Sri Lanka. The importance and competency levels were collected using a 5-point Likert scale (ranging from 1: very low to 5: very high). Purposive sampling was used in this study, and a web-based questionnaire survey form was developed and distributed via emails to 189 IFMSL members who have registered under the associate, member, and fellow categories. Furthermore, the questionnaire was disseminated to 35 non-FM graduates employed as FM practitioners in leading FM organisations in Sri Lanka. Purposive sampling techniques were used in the study to target individuals who possess specific experiences related to FM. The data collected through the questionnaire survey were analysed using their mean ratings. To further analyse the relationship between the perceived importance and competence levels indicated by the respondents, the Importance-Performance Analysis (IPA) matrix was utilised. IPA is a "simple and useful technique for identifying those attributes of a service that are most in need of improvement" (Abalo et al., 2007, p. 115). While reference is made to the IPA method, this study investigated "competence level" rather than "performance level". Hence, the term is modified to Importance-Competence Analysis (ICA). The calculated mean importance and competence ratings were analysed using the ICA matrix. Among the different matrix variants available, the flexible diagonal line approach (Lai & Hitchcock, 2015), in combination with the data-centered quadrants approach (due to its ability to demonstrate the utilisation of resources), was adopted to develop the ICA matrix for the present study. The steps taken are as follows:

- **Step 1:** Initially the data centered traditional matrix with four quadrants was constructed. The location (axis value) of the horisontal demarcation line was determined using the mean rating of the importance levels of all the 12 CAs and the location (axis value) of the vertical demarcation line was determined using the mean rating of the competence levels of all the 12 CAs. The y-axis of the matrix indicates the importance level, whereas the x-axis indicates the competence level.
- **Step 2:** A 45° diagonal line across the demarcation lines is used to re-partition the matrix for further, detailed analysis of the importance-competence ratings. The region above the diagonal line represents a high priority for improvement and the region below represents a low priority; also, the distance to the diagonal line is considered as an indicator for prioritising the improvement (Bacon, 2003).

Accordingly, the findings of the ICA matrix were used to identify educational and training needs for FM students and practitioners in the Sri Lankan FM industry.

# 4. FINDINGS AND DISCUSSION

## 4.1 DEMOGRAPHIC DETAILS OF RESPONDENTS

The number of total responses received was 126, of which the majority came from the sectors of commercial buildings, construction sites, residential buildings, and industrial buildings (Figure 1). Among them, the commercial building sector had the highest proportion (46%) of participants who took part in the survey. The distribution of the respondents illustrated in Figure 2 shows that the FM industry of Sri Lanka is in its adolescence, as the majority (61%) of the respondents are with 0-5 years of experience.

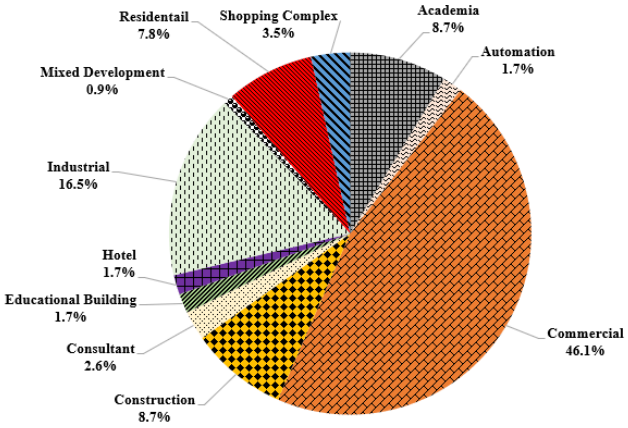


*Figure 1: Demographic details of the respondents*

*[Industry sectors]*

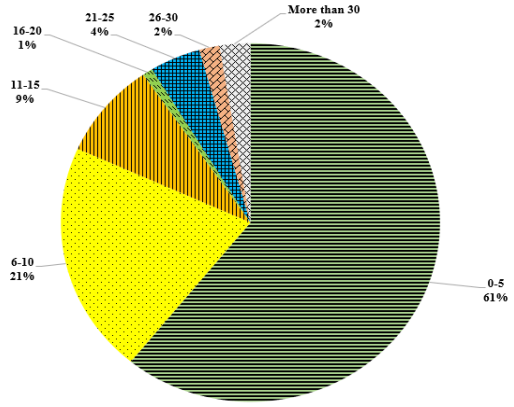


*Figure 2: Demographic details of the respondents*

*[Years of Experience]*

## 4.2 IMPORTANCE AND COMPETENCE LEVELS

Figure 3 shows the ICA results on the traditional data-centered matrix, while figure 4 shows the ICA results on the modified matrix (with a diagonal line).

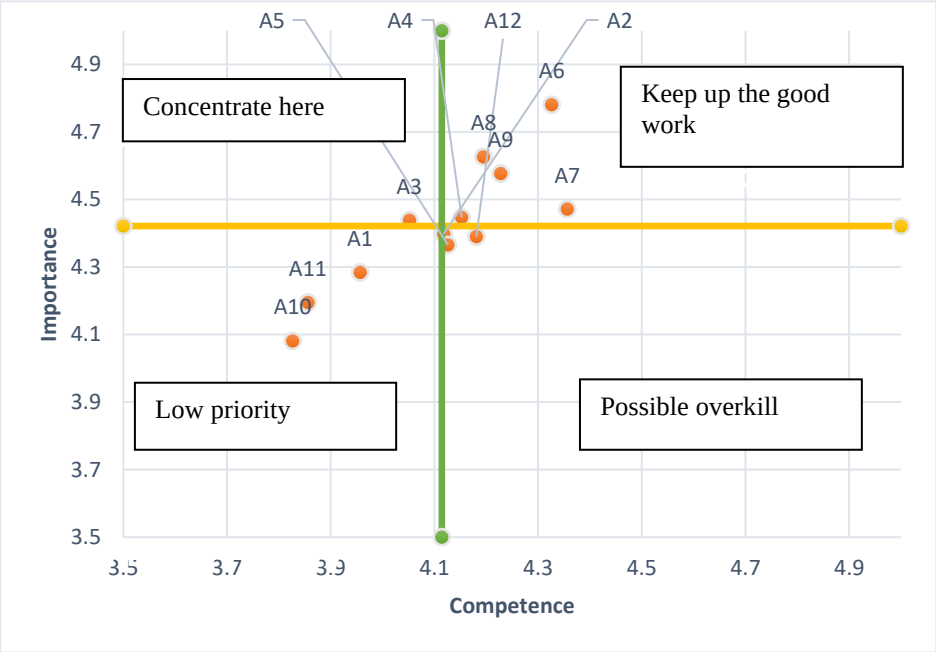


*Figure 1: Results on the traditional data-centered ICA matrix*

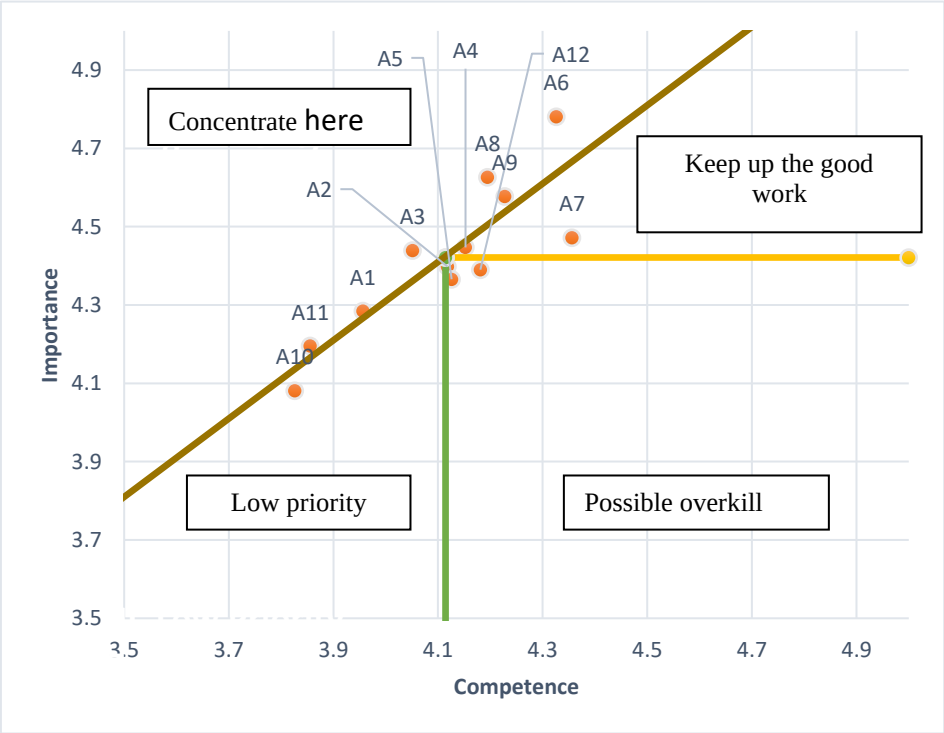


*Figure 2: Results on the modified ICA matrix*

The vertical and horisontal demarcation lines of the IPA models were determined based on the mean value of the collected responses under 12 competencies. By observing the spread of the competencies on the two ICA matrices, the flexible diagonal line approach offers in-depth insights into the competencies requiring improvement.

### 4.2.1 FM Competencies with an Immediate Need for Improvement

By analysing the results in Figure 4, the need for improvement is mostly required for CA6 - *operations and maintenance***.** It is still contending to gain recognition from building owners and users, as the key driver for organisational improvement. Common shortfalls with operations and maintenance include inadequate knowledge and experience, slow or lack of technology adoption, and lack of involvement at the strategic level (Adewunmi et al., 2009; Naidoo & Bayat, 2020). CA8 - *Leadership* is identified as the second most critical attribute that needs immediate attention. As Gunnoe et al. (2018) mentioned, FM Professionals should shift their focus away from technical skills and instead focus on leadership. Thus, they should not only maintain a building but also be the driving force behind maintaining and advancing a company's physical assets. Since most FM professionals have less than five years of experience and have yet to reach top management, there is a vacuum for strategic-level leaders.

CA3 - *Technology* has been ranked as the third highest priority. Since the FM industry in Sri Lanka is fragmented, and the sub-contractor market is unsophisticated, FM services have not kept pace with the technological advancement of Information Technology (IT), Internet of Things (IoT) and BIM-enabled FM applications, due to inadequate resources and a reluctance to bear high initial costs for technology. Furthermore, a typically low level of expertise and the non-existence of standards to measure the quality of performance are seen as key hindrances for blending technology into the FM industry, as is similarly seen in other developing regions (Adewunmi et al., 2009; Amos et al., 2019).

CA9 - *Emergency preparedness*, which has shown the need for improvement, is one of the 11 core competencies in FM as stipulated by IFMA. In the recent past, events such as Tsunami, the Covid-19 pandemic, import restrictions, increased taxes, frequent power outages, and increased material costs due to the severe economic crisis in the country are major situations that re-emphasise the importance of strategic emergency preparedness planning. The study conducted by Chandrasekera and Hebert (2019) for the tourism sector in the country found that preparedness plans have not covered tsunami-related flooding, frequent power outages and other unexpected situations, other than flooding, fire, and terrorist attacks. The same study found that the lack of financial support for preparing such plans was stated as one of the main barriers to increasing companies' overall state of preparedness. CA11 - *Financial management* has also fallen into the high-priority zone in the ICA matrix. This demonstrates the significance of prudent financial management in these times of rising operational costs and budgetary constraints in Sri Lanka. According to Amos et al. (2019), the timely release of funds for FM tasks, proportion of the FM budget, and cost-effectiveness in delivery are the key indicators of financial management competency. Among the under-capacity attributes, CA1 - *Property portfolio management* has been ranked as the least priority attribute for performance improvement in Sri Lanka. The involvement of FM in Sri Lanka is not largely expanded to property portfolio management yet, as the profession is still in its adolescence. Thus, the insufficient knowledge and inexperience of the respondents could be a plausible reason for the low priority of the attribute.

### 4.2.2 The Need for Education and Training to Enhance the Identified FM Competencies

While CAs such as operations and maintenance, leadership, technology, emergency preparedness, financial management, and property portfolio management calls for

extensive improvement in education and training needs, it should be acknowledged that the competence levels of FM practitioners in attributes such as legal, project execution and management, organisational resources management, procurements and contracts management, documentation management, and compliance management were perceived by the respondents to be up to the industry needs. The findings give an important message to the educational sector including higher education institutions, professional institutions, and training divisions in FM organisations that more attention to developing essential courses is required. With the current advancement in building technology, the requirements and demands of the occupants are ever-increasing. To cater to their requirements, it is essential that the knowledge and skills of practising facility managers evolve with education as well as hands-on experience. Hence, more in-depth studies are required to identify the root causes of the low competency levels. For example, whether the causes are about the curriculum of FM education or the CPD programs organised by professional institutions would need to be investigated. In parallel, efforts should be made to implement measures for raising competency levels. For instance, FM employers should provide opportunities for FM graduates and practitioners in the early stages of their careers to attend on-the-job training sessions sponsored by the organisation. A close relationship between the practitioners and the academia should also be established. The Quality Assurance unit of the University Grants Commission of Sri Lanka is currently in the process of developing subject benchmarks for each higher educational programme. With the establishment of the new Department of Facilities Management at the University of Moratuwa, the academic staff, together with the support of the University's alumni from the FM industry, will be committed to addressing the education and training needs to enlighten the future of the Sri Lankan FM industry.

## 5. CONCLUSIONS

The objectives of the study were to identify the competencies required of an FM professional, solicit the importance level of the FM competencies in the Sri Lankan context and their current competence levels, and finally recommend the need for education and training to enhance the identified FM competencies. A scrupulous literature review was conducted to synthesise the key FM competencies stipulated by reputable FM institutions. A web-based questionnaire survey, designed on 12 FM Cas1 identified from the literature review, was then conducted to seek practitioner opinions about the importance and current competence levels of each attribute. The collected data were analysed using a modified ICA matrix.

Findings reveal that 60.9% of respondents had only 0-5 years of FM experience, implying that the FM industry is still in the adolescence stage in Sri Lanka. Given this situation, competency attributes such as 'operations and maintenance', 'leadership' and 'technology' were identified as competencies in the high-priority zone of the ICA matrix. Hence, these competencies warrant immediate attention from FM educators and trainers. Priority should be given to these competency areas when developing FM degree program curriculums, CPDs and other training awareness sessions to improve the knowledge levels of professionals. Specifically, arranging discussion forums between academia and the industry to enable closer collaborations between the sides is worth considering.

While this study has unveiled insightful findings, it is not without limitations. Even though the study examines the relationship between the importance and competence levels of FM competency attributes, it does not reflect the actual competency gaps

prevalent in the industry. Hence, it is recommended that further studies should be pursued in the future to identify the competency gap of each attribute to facilitate the development of more in-depth and focused solutions for meeting the education and training needs of the FM industry in Sri Lanka.

# 6. REFERENCES

Abalo, J., Varela, J., & Manzano, V. (2007). Importance values for importance–performance analysis: A formula for spreading out values derived from preference rankings. *Journal of Business Research*, *60*(2), 115–121. https://doi.org/10.1016/j.jbusres.2006.10.009

Adewunmi, Y., Ajayi, C., & Ogunba, O. (2009). Facilities management: Factors influencing the role of Nigerian estate surveyors. *Journal of Facilities Management*, *7*(3), 246–258. https://doi.org/10.1108/14725960910971504

Amos, D., Au-Yong, C. P., & Musa, Z. N. (2022). The mediation effects of finance on the relationship between service quality and performance of hospital facilities management services. *Facilities (Bradford, West Yorkshire, England)*, *40*(3/4), 149–163. https://doi.org/10.1108/F-12-2020-0130

Bacon, D. R. (2003). A comparison of approaches to importance-performance analysis. *International Journal of Market Research*, *45*(1). https://journals.sagepub.com/doi/10.1177/147078530304500101

Chandrasekera, T., & Hebert, P. (2019). Emergency preparedness in the hospitality industry in Sri Lanka. International Journal of Disaster Resilience in the Built Environment, *10*(2/3), 167-174. doi: 10.1108/IJDRBE-01-2018-0001

Gunnoe, J., Kashiwagi, J., & Corea, R. (2020). The next generation of facility management: Nurturing millennial leadership. *Journal for the Advancement of Performance Information and Value*, *10*(1), 125–132. https://doi.org/10.37265/japiv.v10i1.26

Institute of Facilities Management Sri Lanka [IFMSL]. (2023). https://ifmsl.lk/

Kamaruzzaman, S. N., Myeda, N. E., Zawawi, E. M. A., & Ramli, R. M. (2018). Developing facilities management (FM) competencies for Malaysia reference from international practice. *Journal of Facilities Management*, *16*(2), 157–174. https://doi.org/10.1108/JFM-08-2017-0036

Lai, J.H.K. (2010), Building operation and maintenance: education needs in Hong Kong, *Facilities*, *28*(9/10), 475-493. doi: 10.1108/02632771011057206

Lai, J.H.K., Tu, K.J., Lian, J.K.M. and Kim, J.H. (2019), Facilities management education in the four Asian dragons: A review, *Facilities*, *37*(11/12), 723-742. https://doi.org/10.1108/F-06-2018-0066

Lai, I. K. W., & Hitchcock, M. (2015). Importance–performance analysis in tourism: A framework for researchers. *Tourism Management*, *48*, 242–267. https://doi.org/10.1016/j.tourman.2014.11.008

Mace, J. R. (2005). *Total Facilities Management* (3rd ed.). Blackwell Science Ltd.

Mohamat-Nor, N.A., Mohammed, A.H., & Alias. B, (2014). Facility management history and evolution. *International Journal of Facility Management*, *5*(1). https://www.academia.edu/9962414/Facility_Management_History_and_Evolution

Naidoo, P. J. & Bayat, M. S, (2020). Evaluating the growth and evolution of facility management in innovating integrating and aligning business strategies to achieve a competitive advantage. *Management Studies and Economic Systems*, *5*(1-2), 1–13. https://www.semanticscholar.org/paper/Evaluating-the-Growth-and-Evolution-of-Facility-in-Naidoo-Bayat/5d332c4555f7b7eda49db87cdc134e9256805d80

University of Moratuwa. (2023). Facilities Management. Retrieved March 25, 2023, from *https://uom.lk/becon/programmes/undergraduate/facilities-management*